TRANSACTIONS

OF THE

PENNSYLVANIA

State Dental Society,

FROM ITS ORGANIZATION TO THE CLOSE

OF ITS

THIRD ANNUAL MEETING.

LANCASTER, PA.:
WYLIE & GRIEST, INQUIRER PRINTING HOUSE AND BOOK BINDERY.
1872.

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PENNSYLVANIA STATE DENTAL SOCIETY.

ORGANIZED DECEMBER 1, 1868.

COMMITTEE OF PUBLICATION.

SAMUEL WELCHENS,.....Lancaster, Pa.
JOHN McCALLA,.....Lancaster, Pa.
WM. N. AMER,.....Lancaster, Pa.
C. L. BAGLEY,.....Meadville, Pa.
A. B. ROBBINS,.....Meadville, Pa.
G. T. BAKER,.....Philadelphia, Pa.
J. D. WHITE,.....Alleghany, Pa.

INTRODUCTION.

A BRIEF HISTORICAL SKETCH OF THE FORMATION OF THE "PENNSYLVANIA STATE DENTAL SOCIETY."

The formation of the "Pennsylvania State Dental Society" was not the result of a preconceived idea, that was worked up and developed by a succession of conferences and meetings held for that purpose by its authors.

Nor was the usual mental labor of the plan and objects of such movements bestowed upon it. It sprung, almost Phœnix-like, from the deliberations of a body of men, met together in a small town in the interior of the State for mutual, social and scientific improvement in the profession of dentistry.

A convention of dentists, consisting of the Harris Dental Association of Lancaster, the Lebanon Valley Dental Society, and a number of professional gentlemen from other local societies, was held at the Litiz Springs in July, 1868. The formation of an extended or general organization was in no way connected with the inception of this movement, but the idea being suggested in the progress of the proceedings was at once acted upon, with the most happy results.

In the address of welcome (by the president of the Harris) the following language was used: "May we not hope that at no very distant day our profession and patrons will be protected from these vampires by suitable legislative enactment? Our brethren of the State of New York have recently set us a noble example in this direction. Pennsylvania, with her two dental colleges and numerous associations, should not be behind in this particular." * * * "And may the occasion which has brought us together prove to be both interesting and improving to all concerned, and be but

the beginning of a series of reunions which shall ultimately embrace all the dental associations of our State."

An essay, read by a member of the Harris Dental Association, upon the subject of "Professional Status," set forth the same ideas, the conclusion of which was as follows:

"The following item, copied from one of our dental periodicals, may be of interest in this connection: 'The law compelling dentists to get a diploma from a dental college, or a certificate of qualification from the State Dental Society, or some local society, now exists in Ohio. A similar bill was before the Indiana Legislature last year.'

"The importance of some such a measure in Pennsylvania cannot be overestimated. We may write and talk of 'Professional Status,' and the importance and superiority of our specialty as much as we please, we will never be able to control the internal operations of the profession of dentistry, or educate the public mind up to the standard of a proper appreciation of its excellence, without some such authority or legal power.

"Would it not be well, in the light of all that has been said here to-day, to take some action by which a State society might be organized, or legislative enactment, such as is above referred to, might be secured for the improvement and protection of the profession in this State. Our time could not be more profitably employed, and this convention of two well organized and good working societies could do nothing better calculated to immortalize the advent of this meeting than to direct its efforts toward the consummation of such an object."

These hints and suggestions thus boldly thrown out were not allowed long to lay dormant. They were taken up during the deliberations of the convention, thoroughly discussed, and it was finally resolved that a committee consisting of the president and secretary of each of the two societies there convened be appointed, to confer with all the other local societies of the State; and, if deemed expedient after such conference, to call a convention of representatives of the profession all over the commonwealth for the purpose of organizing a State society.

The following is the circular issued:

LANCASTER, PA., August 31, 1868.

DEAR SIR:—At a convention of dentists held on the 9th of July last, at Litiz Springs, Lancaster county, a committee was ap-

pointed to confer with the dental associations throughout this State in relation to the abuses now existing in the dental profession, and the urgent necessity for some legislative interference, to restrain ignorant and unprincipled persons from the practice of dental surgery, and establish some standard of qualification calculated to shield the public from the prevailing evils of empiricism. With this end in view, we propose the formation of a State dental society, to be composed of delegates from the associations now in existence, or that may hereafter be formed upon the same general principles. In carrying out the views of the convention, the committee are of opinion that the simple proposition is sufficient to secure a favorable response, and that any resort to argument is therefore deemed unnecessary. Be good enough to lay the matter before your society at its next meeting, and communicate whatever action you may take in the premises to either of the undersigned.

Jno. McCalla, Lancaster,
S. H. Guilford, Lebanon,
W. Nichols Amer, Lancaster,
W. H. Scholl, Bernville, Berks co.,
} Committee.

The committee proved to be efficient, and accordingly the following circular was issued, and not only addressed to the local societies and the dental colleges, but to every practitioner throughout the State whose name and address could be procured.

Lancaster, Pa., November 16th, 1868.

Sir:—A convention of dentists held at Litiz Springs, Pa., July 9th, 1868, having suggested the formation of a State Society, to be composed exclusively of the practitioners of our profession in Pennsylvania, the coöperation of such local associations as were known, has been secured, and it is proposed that delegates from the different bodies, at the rate of one for every *five active members*, be duly elected and empowered to represent their fellows in general convention, for the purpose of taking the initiatory steps and framing a constitution and by-laws; also, to make such provisions as may by them be deemed proper and necessary for securing the passage by the next Legislature in January, 1869, of laws chartering the institution and regulating the practice of dentistry in this State.

The meeting of the representatives to take place at the Philadelphia Dental College, No. 108 North Tenth street, Philadelphia, at 10 o'clock, A. M., on Tuesday, the 1st of December, 1868.

Your attention is invited to this highly important matter, with the hope that you will give it your favorable consideration and aid.

The formation of local societies, especially in neighborhoods where there are none at present, and the action of organized bodies to elevate our profession, need hardly be mentioned to awaken any one to an appreciation of the influence such proceedings will exert.

A general invitation is extended to practitioners *to be present* at the meeting.

JNO. MCCALLA, D. D. S., WM. NICHOLS AMER, S. H. GUILFORD, D. D. S., W. H. SCHOLL, D. D. S.,	Committee of Litiz Convention.
T. C. STELLWAGEN, D. D. S., WM. A. BREEN, D. D. S., W. P. HENRY, D. D. S., CHAS. M. CURTIS, D. D. S.,	Committee of Odontographic Society.
JAMES TRUMAN, D. D. S., T. L. BUCKINGHAM, D. D. S., EDWIN T. DARBY, D. D. S.,	Committee of Pennsylvania Association of Dental Surgeons.
J. S. SUSSEROTT, D. D. S., GEO. W. NEIDICH, D. D. S., W. B. HAYCOCK, J. C. MILLER,	Cumberland Valley Dental Society.

The call was promptly and liberally responded to, and a large body of men, comprising the best talent and the highest respectability in the State, convened in the large hall of the Philadelphia College, at the time designated in the circular, and after three days of pleasant and harmonious deliberation the organization was completed.

PROCEEDINGS

OF THE

CONVENTION OF DENTISTS,

FOR THE FORMATION OF THE

PENNSYLVANIA STATE DENTAL SOCIETY.

In pursuance of a call issued some two months previous by the joint action of two local dental societies, a number of gentlemen, delegated for the purpose, met in convention on Tuesday, December 1, 1868, at the Philadelphia Dental College, for the object, as stated in the circular, "of taking the initiatory steps, and framing a constitution and by-laws, in the formation of a State Dental Society; also to make such provisions as may by them be deemed proper and necessary for securing the passage by the Legislature of laws chartering such society, and regulating the practice of dentistry in the State of Pennsylvania." At the hour mentioned in the circular (10 A. M.), the large hall of the college building was well filled with members of the profession of the highest standing, from every part of the State, and after the courtesies of introduction and interchange of views, they were called to order half an hour later.

On motion of Dr. S. H. Guilford, of Lebanon, Dr. John McCalla, of Lancaster, was elected president, and Dr. Geo. W. Neidich, of Carlisle, was chosen secretary of the convention.

Prof. James Truman, of Philadelphia, moved that a committee on credentials be appointed, when Drs. Breen, of Philadelphia, and

Gerhart, of Lewisburg, in connection with the mover, were appointed. The committee retired, and in a short time reported the following as delegates from the local societies and college:

Harris Dental Association.—Drs. John McCalla, S. Welchens, W. Nichols Amer and J. Z. Hoffer.

Susquehanna Dental Association.—Drs. M. D. L. Dodson, H. Gerhart, J. D. Wingate and R. E. Burlan.

Cumberland Valley Dental Association.—Drs. J. L. Suesserott and G. W. Neidich.

Lebanon Valley Dental Association.—Drs. S. H. Guilford, W. H. Scholl and W. K. Brenizer.

Lake Erie Dental Association.—Drs. A. B. Robbins, J. G. Templeton and E. W. Pierce.

Odontographic Society of Pennsylvania.—Prof. C. A. Kingsbury, Drs. W. P. Henry, Wm. A. Breen, C. M. Curtis, S. S. Nones, M. Lukens Long, J. W. Moffitt, Wm. C. Head, Ambler Tees and Thomas C. Stellwagen.

Pennsylvania Association of Dental Surgeons.—Prof. T. L. Buckingham, Geo. T. Barker, and James Truman; Drs. E. R. Pettit, R. J. Huey, Spencer Roberts, John H. Githens, Amos Wert, E. T. Darby, Milton Keim, W. H. Truman, Wm. Smedley, and Jesse C. Green.

Philadelphia Dental College.—Prof. J. H. McQuillen.

Pennsylvania College of Dental Surgeons.—Prof. E. Wildman.

On motion, the following gentlemen were appointed a committee to draw up a constitution and by-laws for a permanent organization of the State Society: Profs. McQuillen, Wildman and Truman; and Drs. Amer, Dodson, Suesserott and Stellwagen.

In due time the committee submitted a draft of a constitution which had previously been prepared by a member of the committee. The report was read by the secretary, and, on motion, it was accepted and the committee discharged.

The convention then decided that each section should be taken up, read and acted upon separately.

A debate on the propriety of having permanent members as well as delegates to constitute the membership of the State Society, opened the action, and it was agreed to retain the words "permanent members" in the constitution, but that all legislative business should be transacted by the delegates.

The convention then adjourned until 2½ o'clock P. M.

Afternoon Session.

The convention was called to order by the president, Dr. McCalla, and the consideration of the constitution was resumed.

A pretty unanimous action characterized this session in the adoption of the various parts and sections, until Article VII. was reached, where the essential character of the society was to be formed.

Section 1st of this article, as prepared by the committee, was so framed as to give the society a censorious or arbitrary power over the local associations and colleges, thereby bestowing a centralization of authority, which could not be allowed by its representative character. The section was advocated by Profs. McQuillen, Kingsbury, Stellwagen and others; but most strenuously opposed by Prof. Truman, Drs. Robbins, Welchens and Barker. By a vote of the convention the section was so modified as to conform to the views of the latter named gentlemen.

Section 2d of the same article was then the theme of a long and earnest debate, in which a number of the delegates participated, when, finally, it was also modified.

The convention adjourned until next morning at 9½ o'clock.

Wednesday Morning.

The delegates assembled as per adjournment, President McCalla in the chair. The convention was called to order, and proceeded at once with the adoption of the constitution and by-laws, with the determination to settle all as promptly as could be done consistently with the importance of the work before them; and before the morning session closed they succeeded in thoroughly sifting and completing the task. On motion, the constitution and by-laws were then adopted as a whole. After the following gentlemen had signed it and settled their dues, they proceeded to

elect officers for the State Society, the organization of which had just been completed:

John McCalla, Lancaster; Geo. W. Neidich, Carlisle; Samuel Welchens, Lancaster; W. Nichols Amer, Lancaster; J. Z. Hoffer, Columbia; M. D. L. Dodson, Williamsport; H. Gerhart, Lewisburg; John D. Wingate, Bellefonte; R. E. Burlan, Lewisburg; J. L. Suesserott, Chambersburg; J. H. McQuillen, C. A. Kingsbury, S. S. Nones, M. Luken Long, Thomas E. Stellwagen, Philadelphia; J. W. Moffitt, Harrisburg; W. H. Scholl, Bernville; T. L. Buckingham, James Truman, Elisha R. Pettit, John H. Githens, Philadelphia; Jesse C. Green, West Chester; J. G. Templeton, New Castle; E. M. Pierce, Warren; A. B. Robbins, Meadville; Wm. Smedley, West Chester; Geo. T. Barker, Samuel J. Dickey, Philadelphia; W. K. Brenizer, Reading; W. A. Breen, W. H. Truman, Philadelphia.

The election of officers being next in order, resulted as follows:

President.—Dr. A. B. Robbins.

First Vice President.—Dr. J. L. Suesserott.

Second Vice President.—Dr. Samuel Welchens.

Recording Secretary.—Dr. Geo. W. Neidich.

Corresponding Secretary.—Dr. Thos. C. Stellwagen.

Treasurer.—Dr. John McCalla.

Censors.—Profs. J. H. McQuillen and James Truman; Drs. H. Gerhart, J. G. Templeton and J. W. Moffitt.

Two gentlemen were appointed a committee to conduct the president elect to the chair, and after expressing his thanks for the honor conferred upon him, proceeded at once to business.

On motion, a vote of thanks was tendered to Dr. John McCalla, the retiring president of the convention, for the able manner in which he presided over that body.

The delegates then resolved themselves into the *Pennsylvania State Dental Society.*

The following standing committees were appointed:

Executive Committee.—Profs. Kingsbury and Buckingham, and Drs. Moffit, Brenizer and Green.

Publication Committee.—Profs. McQuillen, Buckingham and Truman, and Drs. McCalla, Stillwagen, Neidich and Pierce.

On motion, the secretaries and treasurer were directed to purchase the books required for their records, and that the original draft of the constitution be bound in front of the book contain-

ing the approved written constitution and the signature of the members.

Prof. McQuillen moved that a committee be appointed to draft a bill to secure legislation to govern the practice of dentistry in this State, and to charter this society. The chair named as this committee:

Profs. McQuillen, Kingsbury and Truman, Drs. McCalla and Moffit.

After an invitation being extended by the deans of the two dental colleges to the members of the profession present to visit those institutions, it was resolved that when the society finally adjourns, it will be to meet in Harrisburg, at 10 A. M., on the second Tuesday in June, 1869.

Afternoon Session.

The society met pursuant to adjournment. The president, Dr. Robbins, in the chair.

The committee on the draft of the bill for the State Legislature reported, which being accepted, the committee was discharged.

The bill was taken up and considered item by item, the same as the constitution, and after a thorough sifting of its contents, and certain modifications being made, it was passed as follows:

A law to regulate the practice of dentistry in the State of Pennsylvania.

Section I. *Be it enacted by the General Assembly of the State of Pennsylvania*, That it shall be unlawful for any person to practice dentistry in the State of Pennsylvania for compensation, unless such person has received a diploma from the faculty of a reputable dental college, duly incorporated under the laws of this or some other State of the United States, or foreign country, or has obtained a certificate of qualification, issued by the State Dental Society: *Provided*, That nothing in this section shall apply to persons now engaged in the practice of dentistry in this State, before the first day of January, 1871.

Section 2. It shall be the duty of the State Dental Society,

at its first annual meeting after the passage of this act, to authorize the board of censors of the State Dental Society to act as a board of examiners, whose duty it shall be to meet at least once a year to examine all applicants, and upon a satisfactory examination, shall recommend the applicants to the State Society as entitled to receive a certificate of qualification to practice dental surgery within the jurisdiction of this State.

SECTION 3. To provide a fund to carry out the provisions of section 2d, it shall be the duty of the board of examiners to collect, from all who receive the certificate to practice dental surgery, the sum of thirty dollars ($30) each; of which sum, if there be any remaining after liquidating necessary expenses, shall be paid into the treasury of the State Dental Society, to be kept as a fund for the more perfect carrying out of the provisions of this law; and, to remunerate the board of examiners, they shall receive ten dollars ($10) a day from the above fund for each day of actual service.

SECTION 4. Any person who shall practice dentistry without having complied with the regulations of this act, shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall be fined not less than fifty dollars ($50), nor more than two hundred dollars ($200), for each offense: *Provided*, That nothing in this act shall be construed to prevent physicians and surgeons from extracting teeth.

SECTION 5. All prosecutions under this act shall be by indictment before the court of quarter sessions in the county where the offense is committed, and all fines imposed and collected under the provision of this act shall be paid into the treasury of the poor fund.

SECTION 6. This act shall take effect and be in force from and after its passage.

The following committee was then appointed to secure the passage by the Legislature of this bill:

Drs. Moffitt, McCalla and Brenizer.

The committee on publication was then authorized, by a vote of the society, to draw upon the treasury for a sum not exceeding twenty-five dollars, to be used for the purpose of printing this bill, together with the constitution and by-laws of the State Society.

The business having all been transacted, the society adjourned to meet at Harrisburg, on the second Tuesday of June, 1869.

FIRST ANNUAL MEETING

OF THE

PENNSYLVANIA STATE DENTAL SOCIETY.

The first annual meeting of the Pennsylvania State Dental Society was held in the hall of the House of Representatives, at Harrisburg, June 8th, 1869, at 10 o'clock A. M.

In the absence of the president, Dr. A. B. Dobbins, Dr. Samuel Welchens, 2d vice president, assumed the duties of the chair.

Members present: Drs. John McCalla, Samuel Welchens, Wm. N. Amer, J. Z. Hoffer, W. H. Scholl, W. K. Brenizer, Geo. W. Neidich, A. B. Robbins, J. G. Templeton, H. Gerhart, John H. Githens, J. W. Moffitt and Prof. T. L. Buckingham.

The board of censors, through their chairman, Dr. Gerhart, reported that they examined the constitution and by-laws and lists of members of the following local societies, and find them in harmony with the constitution of the State Society, and that they are entitled to representation in this body: The Harris Dental Association; the Lake Erie Dental Association; the Susquehanna Dental Association; the Cumberland Valley Dental Association, and the Lebanon Valley Dental Association.

They further reported having examined the credentials of the delegates of the above named associations and find them correct; and the following delegates were declared entitled to seats in the State Society:

Dr. G. B. McDonneld, of the Lake Erie.

Drs. P. W. Hiestand, John G. Moore and M. H. Webb, of the Harris.

Dr. H. H. Martin of the Susquehanna.

Drs. Geo. F. Platt and J. C. Miller, of the Cumberland Valley.

Dr. James Fleming and W. K. Lineaweaver, of the Lebanon Valley Societies.

The delegates from the Odontographic and the Pennsylvania Dental Societies of Philadelphia were debarred from the privilege of membership on account of their societies neglecting to present their constitution, by-laws and lists of membership, as required by the constitution of the State Society.

Their delegates, Dr. R. J. Huey and Eisenbrey, were tendered complimentary seats.

The minutes of the last meeting were then read by the secretary, Dr. Neidich, and corrected and adopted by the society.

Adjourned until 2 o'clock P. M.

Afternoon Session.

The meeting was called to order by the president, Dr. A. B. Robbins.

Dr. Amos Wert was admitted, by vote of the society, to full membership, he having attended the meeting of the convention at the organization of the society, but was absent at the signing of the constitution.

The executive committee reported that they had secured the hall of the House of Representatives for the use of the society during its meeting, and that they succeeded in procuring a charter from the Legislature of Pennsylvania for the incorporation of this society. But, owing to some unknown influence, they have failed to secure legislative enactment for the regulation of the practice of dentistry in this State.

The report was accepted, and the charter formally presented; and, after being read by the secretary, was adopted.

The publication committee reported having printed, and distributed among the members of the society, two hundred and fifty copies of the constitution and by-laws, and the same number of the bill which was presented to the Legislature; also, they have purchased all the books necessary for the society. The report was adopted.

On motion, the treasurer was authorized to pay to Dr. W. N. Amer the sum of twenty-eight dollars and twenty-five cents, reimbursing him for the publication and distribution of the call for the convention to organize this society.

The board of censors reported having examined the charter of the Pennsylvania College of Dental Surgeons, and that it is entitled to representation in this society; and, also, the credentials of Prof. T. L. Buckingham, as a delegate from the institution, as satisfactory.

The treasurer reported a balance in hand of $19.06, after paying all the bills. Referred to the executive committee for examination.

The president, Dr. Robbins, delivered the following address:

ANNUAL ADDRESS.

A. B. ROBBINS, D. D. S., PRESIDENT.

Gentlemen of the State Dental Society of Pennsylvania: Upon me devolves the duty of opening the annual meeting of this association with some remarks, or, as the constitution has it, an address. The fair presumption is that I am expected to say something that shall in a measure point out or suggest some of the subjects and duties that ought to occupy our attention. This duty will be but feebly performed; yet, rather than neglect a duty that might be a precedent for my successors, I will make some remarks, although they be thrown together in a hurried manner.

Our assemblage at this time, the first since the organization, marks an era not only in the history of the State Dental Society, but in that of our *profession*.

Though we have here assembled but a small number of the one-fifth entitled to represent the associated effort of our State, and a yet smaller proportion of the more than one thousand engaged in the practice (so-called) of dentistry, there will go out from this meeting influences which shall be felt not alone after many years, but which shall very soon tell for the future good of the profession, or shall cast gloom, clouds and hinderances over the earnest longings, aspirations and efforts of noble laborers to elevate professional standing and enlighten the public.

It behooves us to lay such a foundation and do such work as shall give joy and not grief. The local associations of our State are not all they ought to be; their membership includes many who would pass a sorry examination, indeed, for the degree of D. D. S.—some who know full well that they come short of the mark; others who would fain have you think that dentistry was of small account before their luster was shed upon it, and that without them societies and the profession itself would not long have a respectable existence. The first step to a higher professional life has been taken, and, if persistently followed, is certain to lead into a better practice. The consciously ignorant will become more painfully aware of shortcomings, and the self-conceited ignorant will have bubble after bubble exploded by the light of science, until, collapsing somewhat into their normal condition, they can be stimulated to begin the building-up process, both classes seeing and learning by associating with their fellows.

The majority of the members are willing and able instructors and learners—mutually encouraging and reproving as the best light they have prompts to action.

As surely as the feeble, flickering flame of a taper is real light and is better than darkness, revealing object after object before unseen, increasing the searcher's desire for more light and more revealings, so surely does the light of science create a demand for more and more light, until the full blaze of present illumination sends the seeker to find aids for his vision; then come magnifiers and appliances until life's labors are ended, not by the loss of interest and the filling of the cup of desire—no, no—but by the frailty of the physical man and its inability to aid the greater and increasing demands of the mind. Is there not a real pleasure, at this point, in just directing the eye of faith within the vail and catching a glimpse of the brightness and opportunities there revealed, opening up for the immortal traveler in his searchings for new unfoldings?

Tell me, is the man who cannot see the things magnificently displayed to the sight of the natural eye—who has eyes yet sees not, and having ears hears not—is he able to go deep into the hidden things that God has given us to unlock with the key of science, and see and understand—shall such say, "there are no

pearls of value here, for I cannot see them?" I must return to my subject.

Outside of the association are many so-called dentists whose highest ambition seems to be to secure the confidence of some young lady who will permit him to extract her "priceless pearls" and sparkling gems, that he can make to disappear like the bright dew-drops before the sun, and feel proud to be able to say: "I extracted thirty-two teeth in less than thirty-two minutes"—for life inflicting deformity and suffering—that he may replace the teeth with his incomparable, non-aching porcelain and rubber.

What, I ask, is to guard innocent, improperly educated people against such destroying angels. What is to prevent men from doing such demoniacal and prison-deserving work? I think, first, a properly conducted State Dental Society, one that shall create a just standard of practice, and be the head and center of dental excellence in our State. A law recognizing the State Society and giving it jurisdiction could be made to regulate practice to some purpose, and afford the people some idea of what ought to be expected from a dentist. Associated effort in everything is productive of greater results than equally earnest efforts by the same number in individual capacity.

Associations for good work and purposes have ever received the divine approval.

The benefits we have and are reaping to-day, resulting from dental associations of the past, are too well understood by my associates here to need words for proof. When we look around us to see who are the noble leaders in our profession, do we ever see the brightest lights shut up, hidden, as it were, under the bushel of the office or laboratory? Nay, verily, they are truly persistent, constant laborers in the office and laboratory; but they come out and meet other zealous workers, and cheerfully give, and are blest in giving, while many are daily rising up and calling them blessed.

Only a small part of this commonwealth has been blessed with intelligent, efficient dental associations; consequently we have a large field to cultivate and much breaking up of the fallow ground of ignorance to accomplish; a great overturning of the sward and stubble of prejudice, conceit and stolid indifference. While this is not a mere figure, but sober reality, is it not cheering to see and know that there are so many whose hearts and minds have had

the plowing and harrowing, and are ready to receive the good seed of instruction, ready to be sown, each by the other, and bear fruit, some thirty, some fifty and some an hundred fold? Blind as we are, until our vision has been educated so that our mind's eye can see when we see, we are all ready to point out what we do see, and try to help willing ones to see as we do. Why even my friend Prof. McQuillen is not only willing to give experts and professional lookers a sight of his tooth cuttings and inter-globular spaces, but will even catch frogs and trichinæ, carefully adjust them in his microscope, and invite those to look who know no more what they are going to see than they do how a mermaid looks. But let a man claim to have seen something which the professor has not seen, and how quickly you have aroused his combative criticism! He could not stand still to see such a man look into his instruments; he could not rub his hands with glee, for they would clutch. Why this difference? One, he believes, is an honest seeker after truth, the other a conceited pretender who does not understand what he sees. Let us guard this point, however, so that we repudiate not real discoveries, and withhold recognition from men competent and worthy. Only four local societies and two colleges in Pennsylvania were represented in the American Dental Association in 1868. Four of the above were honored with only one delegate each. Is it not plain that there is not interest enough taken in associations? This society will remedy the matter somewhat. Our own operators will find that associations are not simply to establish a fee-bill and increase the "*price of work.*"

In one important sense societies, and other educational means, raise the fee-bill. When dentists know that they are performing a better class of operations, are filling a smaller number of teeth a day, if you please, and are conscious of practicing more of a profession than a trade, they no longer advertise "to do work for the lowest price." I think the best and strongest argument I have heard against the fee-bill is that it authorizes the ignorant pretender to charge a fee for what should be a good operation. Gentlemen, that will be remedied only when there is a legal status for dentists.

About nineteen years ago an old dentist from one of our large cities visited my town, and sent broadcast his large hand-bills setting forth the incomprehensible and incomparable advantages

of a "royal mineral succedaneum," better than gold for filling teeth. He actually removed gold fillings from incisors and put in his amalgam. I asked him where he obtained the wonderful "succedaneum," and he told me that he bought the recipe from a dentist in Pittsburg, paying him therefor forty dollars. I asked him if it was essentially different from the published recipe. "Oh," said he, "it has never been published; it is a great secret, and I got it as a favor." To this day Pittsburg has the honor of having her smoke so hide some of her dentists from the light of science that the great favor remains with her, and they still send forth their duped patients with amalgam-puttied, blackened teeth to advertise that they too have been victimized.

In electing delegates to the American Dental Association, I would respectfully recommend you to elect such as will attend the meeting, so that we may have a full representation, and not have delegates who have received the compliment of an election, yet can or will not attend.

The New York State Dental Society has honored us by electing a delegate to attend this society. Let us reciprocate in the same friendly spirit. I would also recommend the appointment of a delegate to the Ohio State Society, and such other dental organizations as you in your wisdom may choose.

There is one subject to which I wish to call your attention, and that is the propriety of fixing the time when the officers of this society shall take their seats, and suggest for your consideration that the American Association indicate the best time to be at the close of the session, so that the officers shall finish up the business of each annual meeting. The Lake Erie Association has adopted this plan, and finds it better than the old plan of installing new officers to carry on the business in the middle of the session. It would be well to determine at what time the executive committee shall choose the subjects for discussion at the meetings. Would it not be well to select some members to prepare essays upon particular subjects, so that greater research and investigation may be presented to quicken our thoughts and start our discussions. But, gentlemen, as over-much legislation is the bane of societies, let us be guarded at the very beginning of our existence; fail, if fail we must, in doing too little rather than too much legislating.

Meeting here, in the city of Harrisburg, I am reminded of a

little dental history connected with the place and the representatives who met here some years ago. A dentist by the name of White published a small book containing recommendations and references of several Senators and Representatives, setting forth the acquirements and good qualities of this dentist. The curious feature to which I wish to call your attention is the theory of the formation of dental calculus or tartar, teaching that it was *excreted by the tubules*, or *pores* of the teeth, and that in febrile diseases it was necessary to give active medicine to cause a complete *expulsion of the effete matter through the teeth*, thus securing more speedy recovery. Now you know how the troublesome deposits occur. Let us see to it that we do nothing that will make us twenty-five years hence appear *equally silly*. I feel that I should not be excusable if I passed over in silence the subject of a law to regulate the practice of dentistry in our own State.

The failure to obtain the passage of the bill presented by our society is not to be wondered at. It would have been a wonderful accomplishment had the committee secured its passage. I foresaw the state of things which afterward did exist, when I urged, in a letter to the Odontographic Society, since published, that the first meeting for the formation of the State Society be held in Harrisburg, in January, so that every dentist in attendance might be able to exert his influence on the Legislature. I have no doubt but that, had the suggestion been followed, we should to-day have had a law that would prevent the disqualified dentists of other States from settling in or traveling about in Pennsylvania, which many are now doing. Unless we have a law of the character proposed before the Ohio law goes into full operation, we shall have the surplus from that State.

There are, however, considerations of more importance. The public will be the gainer far more than the dentists by such a law, and we, awake to its importance, are called upon to act, not only for ourselves, but for the general good. Gentlemen, the handwriting is upon the wall, and, heed it or not, the time is coming when there will be a legal status required from every professional man. Dentistry will be no exception. The public will be awakened to its importance, and if we have, as a profession, failed to give the necessary safeguards, exacting and burdensome requirements will be the result. There is, thank God, a greater value being placed upon the natural teeth by the enlightened and dis-

cerning people of this age, and, just as that appreciation reaches its just height, the demand will be for *conservitors*, not destroyers, of human teeth. Suits for malpractice will be in fashion, I wish they were now, and a standard will be required. I am not unaware that there will be material enough among the ignorant masses to give countenance and support to quacks, and often there will be sharp ones who will know, as one once said, that "the fools are not all dead," who will thrive upon larger pecuniary gains than many a competent and deserving operator. That does not lessen our responsibility. While we are honored with the confidence of the people, and have it in our power to give some protection, let us rise up and do our duty. Let us, after agreeing again on a bill, appoint a committee, and back that committee with means, influence and our united, cordial support.

There are some perhaps reasonable objections to the present bill, but the opposition and objection of certain journals and societies are weak and untenable in my opinion. The objection oftenest urged is that it is so easy to obtain a diploma that old practitioners should not be obliged to pass an examination when they may know much more than the young graduate. If it is so easy to obtain a diploma, why not obtain one and have no further trouble? I am free to admit that old practitioners may, and often do know, more than young graduates; but is there no difference in the knowledge of practitioners? If there is, what shall be the test? Even a school teacher must pass an examination before he can teach a common public school. The time and place of examination may be so modified as not to to be burdensome—but do let us have some test of qualification.

And finally, my brethren, let us tarry here in our deliberations, and with the probe of investigation discover the defects and decays of our dental knowledge, that the chisels tempered with friendship may open up the cavities so that the sharp excavators of truth can remove the debris, the drill of science make proper retaining points and anchorages, even if necessary so as to touch our feelings without obtruding our sensibilities or disturbing the vital pulp; fill with the rich golden nuggets of experience, letting friendly contact burnish, and we shall return to our fields of labor, benefiting our patients with our conscious increase of ability, so that they shall join us in saying: "It has been good for us to have been here."

A letter was read from Dr. J. G. Ambler, delegate elect from the New York State Society to this body, regretting his inability to be present, but extending cordial greetings from his society. The letter was ordered to be filed.

On motion, it was resolved that the next annual meeting of the society be held in the city of Pittsburg.

The following essay was read by Dr. Samuel Welchens, which was well received, and a vote of thanks tendered for the same:

DENTAL HYGIENE.

BY SAMUEL WELCHENS, D. D. S.

The importance of a good hygienic system in the several branches of medicine cannot be over-estimated. The preservation of health should claim the attention of science fully as much as the means of restoring it when impaired or lost

Dental hygiene, though to some extent a specialty, partakes in a very large degree of the element of dependency. It involves some of the most delicate tissues and important functions of the human structure, and therefore must be conditioned and influenced by the general laws of the economy

The capillary net-work, which derives its nourishment from the systemic circulation, constitutes the source of vitality to the teeth, and to keep it in a heatlhy condition, so as to enable it to perform its functions properly, and bestow strength and texture to those dense bony structures, and thus develop a strong and enduring denture is the subject of our present inquiry.

The human teeth are of that class of organs, which are not in any direct relation to the blood-vessels, and yet derive their whole nutriment from the blood. In all other respects, they are almost a separate and distinct creation. They are formed and erupted when all the other organs are faithful to the economy, and lost by disease and decay with but slight inconvenience to the system. Hence they are by no means the most durable, though regarded as the hardest organic substance known to nature. By their peculiar position and relations to the system they are exposed, not only to the wear and tear of mastication, but to derangements and abuses, and thus their office is performed between two most powerful engines of destruction.

The rule seems to be, in many instances, neglect and violence; either by direct contact, or their low vital powers are seriously disturbed through imprudent exposures of the body. These abuses are fruitful causes of decay, and, whilst we acknowledge the deleterious effects of external agencies, we hold that this cause alone of the decay of the teeth is, for the most part, erroneous. Our purpose in this paper is to combat this theory, and maintain the doctrine of internal causation, attributing the decay of these organs to derangements of the functional operation of the system, especially during the period of the formation and calcification of the teeth, not, however, for the purpose of disparaging sanitary measures, but to direct attention, if possible, to both theories, so that our hygienic code may apply and benefit the race from both standpoints.

There are three several conditions of the system in which it is possible so to derange functional energy as to superinduce a corresponding derangement of the capillary nutrition in the tissues, and the complex nature and structure of the teeth being such as to deprive them of a rapid recuperation, such, for instance, as may take place in the softer tissues, they are rendered liable to decomposition and decay through an atrophied or stagnant condition of the nutrient fluid.

The first is that pathological condition in childhood produced by mesenteric derangements or eruptive fevers, whereby an undue consumption of nutrition in the systemic circulation impairs the power of the tissues to appropriate nutriment sufficient to stimulate a healthy action during the formation of the teeth, thus producing weak, delicate organs, and that unsightly, pitted deformity termed "dental atrophy."

The second is a disturbance of functional energy in youth and adult ages by dissipation, and the fashions and habits of modern society; through which there is an insufficient nutrition, thus enfeebling the whole nervous system, and depriving the capillary maze of its normal aliment and stimulant.

The third condition, or element of decay in dental tissue, arises from an undue acceleration of the local circulation, within the general system, or in the capillaries, producing active congestion in the soft, or a gorged hypertrophied state of the vesicles or tubuli of the the hard tissue nourished by the capillaries. The teeth can and often do decay by a too rapid interstitial deposit of

the very substances designed by the economy to render them hard and enduring.

INTERRUPTION OF CAPILLARY NUTRITION.

In all organic structures there are central or vital organs, which supply nutrition to those which are more hardy, and thrown to the surface, and the arrangement is always to have this class of organs deeply seated, for their protection, with each succeeding strata of the fabric, as the growth is outward and upward, becoming more complex and better able to withstand the ravages of time and exposure. This general law of the economy is well settled, and most beautifully illustrated, in the arrangement and formation of the human teeth.

The "cementum," or "crusta petrosa," the "dentine" and the "enamel," constitute the three several divisions of the dental tissue, and the arrangement of nature gives the *cementum* the position nearest the vascular tissue, because it is of a more vascular character, and, consequently, better adapted to hold the fluid imbibed from the blood, and to be transmitted in turn to the more highly organized structure of the *dentine*, and then, again the *enamel* being still more dense and less liable to injury by exposure, comes boldly to the surface and finishes the grandest structure of the animal economy.

The cementum contains about one-third per cent. of animal matter, thus rendering it capable of retaining, and, to some extent, elaborating the fluid secreted from the periosteum to nourish the dentine, into which it passes by the process of "endosmosis." The dentine, therefore, being the medium of vital action between the cementum and the enamel, is the structure which holds the destiny of the entire tooth. The ability of the organism to keep this structure, then, in a healthy state, by preserving a proper vital balance, is the very pith of our subject.

The dentine is, perhaps, the most delicately organized fabric within the entire range of the economy. Its capillary vesicles contain a fluid composed of the finest particles of the blood. This fluid is laden with azotized compounds, designed by nature to build up the tissue and keep it in a healthy condition. By virtue of its extremely delicate and sensitive character, it is easily influenced either to a vigorous action of its circulating medium, or an insufficient stimulation of its vitalizing powers; and, if not disturbed in infancy, or during the period of dentition, it can be,

and often is, in youth or in maturer age, by the causes before mentioned.

In marasmus, catarrh fever, measles, or any of those eruptive diseases incident to childhood, the integrity of the blood becomes impaired, capillary circulation and nutrition are interrupted, and when they are contracted about the time of the formation of the dental tissue, there is an insufficiency of mineral matter for a perfect development of the teeth, and the result is a weak, chalky fabric, or a malformation of the organ, which in either case will be followed by a speedy decay. There is usually a lack of vital energy superinduced by these causes, and, though there may be material enough present for a beautiful, pearly denture, the organization is not vigorous enough to give the tooth that texture which will make it enduring.

Sometimes this consumption of vital energy and nutrition is entailed from parent to child, through abuses of the functional operations of the system. When they are thus congenital, that which is lost by the parent can never be regained by the child. The teeth always become involved in those defections, and can never be restored to an enduring texture.

These pathological conditions of the system thus become chronic or constitutional, many of which must be allowed to run their course, and do their work of destruction. All the dentist can do is to apply his artistic skill, either in treating, properly, the natural organ, or supplying an artificial denture; there being no system in hygiene fully equal to the task of restoring the wreck.

DEFICIENCY OF CAPILLARY NUTRITION.

Our second element of dental distress and decay is an insufficiency of capillary nutrition through and by the abuses of the system, after the teeth have been erupted. This, from whatever cause, will have a more damaging effect upon the dental tissue than any other part of the system nourished by the capillary maze.

A derangement of this character in the epithelial and epidermic, and also the articular cartilage vessels, can be more rapidly overcome and repaired, by reason of the flexibility of their walls and their adaptation to the laws of tolerance pervading the entire structure. But the denser and more highly organized fabric which composes the teeth is not possessed of such rallying power,

and, consequently, must suffer injury corresponding to the amount of damage to the other tissues, done by such irregularity; and not being able to recover as rapidly as the softer tissues, the injury multiplies. Disintegration is almost always followed by disorganization and decay. The extreme delicacy of the organic nature of the tissue we are considering, must here also be kept in view.

The regular course of nature in the vegetable kingdom is analogous to this, and will serve to illustrate the idea we desire to present. So long as the root of a tree promptly supplies the demand of the trunk and the leaves with sap, all goes well; but when this fails, or by some means or other it is impaired or weakened, the foliage begins to flag and droop, and if the exhaustion proceeds beyond a certain point the leaves wither and die. If there is simply a deficiency or an irregularity of the absorbing surface of the root, it may not entirely destroy the foliage or vitality of the plant, but a sickly existence will be the result, with no power to meet the design of its creation. That teeth can decay, and in a majority of cases do decay, from similar causes in the animal structure, we hold to be a physiological truth that cannot be denied. The causes in every instance of this deficiency or interruption of capillary nutrition, we admit, cannot be discovered. It occurs in all grades and ages of the human race, and does not escape the robust and healthy any more than those who are constitutionally weak and delicate.

These irregularities in the capillary circulation have been noted when the systemic circulation was in perfect condition. They are most frequent, however, when the heart's action is enfeebled or partially interrupted, and this can occur, and most generally does occur, through some of the abuses of the system incident to our modern mode of living. Dissipation, exposure, sudden and extreme changes in temperature and habits, improper and insufficient diet, tight lacing, and careless and filthy customs, are among the primary and principal causes. Each and all of these enumerated abuses may produce serious variations, either in whole or in part, of the capillary net-work—the circulation taking place with diminished rapidity in one part, and increased energy in another, though both are supplied by the same trunk. These are not the result of a chronic pathological condition of functional power, but a sequence of their neglect and abuse.

Go into the candy shops, the fashionable hotels and boarding houses, and see the amazing consumption of dainties well calculated to disturb the normal condition of any system, and instead of being aliment for a healthy development of the tissues, they are just the opposite, and serve admirably to produce these very debilitating results; go into the festive social parties, and the brilliant entertainments and balls, so much frequented by the young, particularly of our larger cities, in seasons of gaiety and fashion, where the action of the large organs of the body is impaired, the circulation of the blood is retarded, and the vital energy of the system is driven back upon its center by the half-sufficient dress, the congealing efficacy of a piercing atmosphere in the unseasonable hour peculiar to such a life; go into the haunts of vice and dissipation, and mark the manner in which this grand human structure is abused by those whose interest it is to preserve it—and you have a solution at once of the problem we are endeavoring to solve.

But come home, and see whether your little son or daughter is not suffering the same loss of capillary nutrition and functional energy by close confinement, either in the house or at school, where the pure air and the open, genial sun-light scarcely ever reaches it; or by the use of too much candy and ice cream, or by being overfed at the table with too much sweetened bread, rich pastry and dainty dessert, without a balancing supply of more solid food. Here it is that "Dental Hygiene" should interpose its gracious office, to regulate these dissolute excesses. It should insist on a proper regimen both in children and in adults if we would reëstablish that measure of vital energy that our race is so rapidly losing by not knowing exactly how to live.

UNDUE ACCELERATION OF CAPILLARY NUTRITION.

We may be pointed to a class of people whose habits of life preclude the idea of participation in any of those scenes of dissipation and exposure; or whose children are rarely indulged as above indicated, but yet there seems to be as much decay in the teeth. Look at our sturdy farmers and woodsmen, and the suburban laborers and mechanics in our cities and towns, and throughout the country. They and their children are, for the most part, strangers to these excesses, and seem to be the very embodiment of robust health and manly developement, and yet they come into

our offices with as much dental distress as those above enumerated.

With this class of people *sanitary measures* will go far, very far toward a remedy for such malady, and in perhaps the majority of cases will prevent much of the disease, until more mature age would produce a stronger and more enduring texture in the tissues. But, with all the care that can be taken, they are, at every stage and period of life, confronted with the stern reality of an exposed and aching pulp, through the destruction of all or part of the crowns of the teeth. Can all this be the result of external agencies *alone?* May there not, after all, be some cause of a character purely and entirely internal or constitutional from which such results may be produced?

To this inquiry we answer that we believe there is, and the theory which we hold on the subject will be treated in this the third and last proposition, namely: the liability of the teeth to decay through an undue acceleration of local or capillary circulation, by which there is a gorging or congestion of the tubuli or vesicles of the tissues, thereby interrupting functional power, and producing results similar to an enfeebling insufficiency of capillary nutrition.

In the tree, for example, in seasons of active vegetation, leaves may be observed to wither, die and fall off, notwithstanding the fact that there is a healthy, robust growth, and the foliage seems strong and vigorous. This is the result of an undue acceleration of the circulation of the sap. The leaves which are thus affected become gorged by a too rapid deposit of the saline or mineral matter designed by nature to give strength and texture to the fabric of the leaf, and their destruction is the result of an arrest of functional activity by choking off, as it were, the normal stimulant. "The blood, when circulating through the systemic capillaries, yields a portion of its oxygen to the tissue it permeates, and receives from them carbonic acid. On the other hand, when passing through the pulmonary capillaries, it gives up its carbonic acid to the atmosphere, and imbibes a fresh supply of oxygen. Now, if either of these changes be prevented from taking place, a retardation, and even complete stagnation, of the blood, will take place, the flow through the capillaries being now resisted instead of accelerated, by the relation which the blood bears to the tissues."

"The change in the condition of the blood, in regard to the relative proportions of its oxygen and carbonic acid, is the only

one to which the pulmonary circulation is subservient; but in the systemic circulation the changes are of a more complex nature—every distinct organ attracting to itself the peculiar substances which it requires as the material of its own nutrition." An acceleration, when undue or abnormal, of this character, is known as "active congestion," or "determination of blood." In the softer tissues these pathological conditions can be arrested before inflammation sets in; but in the bony tissues, and especially those forming the teeth, the remedy cannot be applied—the interstitial deposit cannot be corrected or reduced to a normal standard until stagnation has taken place, and the result is, finally, disorganization and decay.

These changes in the capillary circulation may not indicate any distress in larger organs or their functions. The system may be entirely free from any diseased condition of the vital forces. But as an individual, standing upon the shore of a river, may drink in miasmatic poison from the grateful breeze that fans his overheated and sweated brow, so may those hard, unyielding organs receive the seeds of disease and decay, in the very flow of life and spirits which bring the glow of health and beauty upon the cheek.

It is rarely, indeed, that the diseases of the teeth are traced to such healthful surroundings or such robust conditions. But is the fact not apparent, at every step of scientific research, that the elements of life and death are not only running side by side continually through our veins and arteries, but that every step in life and every phase of enjoyment are beset with dangers, which sometimes suddenly lead to the grave.

Here "dental hygiene" is at fault. The dentist, however skillful and thoroughly scientific, must stand abashed before these freaks and mandates of nature, and ply his skill in operations upon the diseased tooth, or allow the work of decay and death to run its course, remove the diseased organ, and restore the function by an artificial dentine. These results do not flow from the causes before enumerated, and consequently cannot be met by the same hygienic treatment; but they confront us at every step of our experience in active practice, and therefore demand our attention.

So far as the principles of the code may be applied, perhaps the best and simplest definition of "dental hygiene" that can be given, may be found in the phraseology "raise the teeth," as you

would raise a child or a tender plant. Observe all the rules known to the term "sanitary regimen," and you meet the demands of the economy so far as external causes are concerned. This treatment goes very far toward the preservation of the dental organs; but, as we maintain, that the cause of decay is not at all times of this outward character, sanitary treatment *alone* is insufficient. To raise a child well, and develop a healthy form and a strong constitution, the process of ablution alone is not all that is required.

There are laws and principles, the observance of which is not only necessary to a vigorous growth of the system, but to regulate the habits, the diet and appetite, and a good physical and mental development are all necessary. Good substantial food, containing the elements necessary to nourish all the tissues of the body—clean, warm clothing to protect the surface from the chilling blasts of winter, plenty of sunlight and regular out-door exercise—all, with temperance and moderation, will not only raise a child well, but in a large majority of cases will go very far toward raising a good denture; and the same moderation of habits, will keep it strong and enduring without the usual destruction, even to old age.

We cannot crowd all the out-croppings and freaks of nature into an easy subserviency to hygienic laws; but in the main, with the deeper intuitions of observant and well-balanced minds, every community can be so educated in general principles, as to aid through popular sentiment, an improvement at least in the general physiological status of the race.

All seem to comprehend the art and mystery of destroying the human fabric. They seem to know exactly what steps to take to run this magnificient structure into decay and dissolution, but are slow, very slow, to grasp and pursue the idea of establishing and preserving a robust form. The simplest way to raise a child well *is to desist from abusing it.* Break in at once and forever upon the habits and fashions which are leading children, almost from lisping infancy, into the maelstrom of extravagance and dissipation. Resist the overpowering pressure of the baser and more vulgar customs of modern life, and yield to the surer and better dictates of nature—if there is no other help at hand—and the work is done.

But to raise a *regular* and *enduring denture* is not always the work of unaided nature. A careful harmonizing of the condition

of growth with the principles of science and art, is the prerogative of our profession, and which should be exercised whenever there seems to be an inability in nature to perform the task.

EXTERNAL CAUSES OF THE DECAY OF TEETH.

In the finest and best developed forms, the teeth often present themselves in most unsightly irregularities. In such cases the skill of the dentist must be brought into requisition; for, however strong in texture such teeth may be, their crowded condition will render them liable to disease from external causes.

A few thoughts in regard to the liability of teeth to decay from neglect and abuse, and the influence of acids and alkalies as they come either in the secretions of the mouth, in food, or by direct contact, and we are done.

That a powerful corrosive action can take place by the decomposing of animal matter, or vegetable substances, through the action of the saliva, when such substances are allowed to remain upon or between the teeth, no one will undertake to deny; and that many teeth are destroyed from such filthy neglect is also a fact beyond controversy. But in most cases, even where these elements are present, and where those more active and more deadly reagents before mentioned do come in contact, the influence they exert is very much over-estimated.

If the teeth are of a first-class development, and there are none of the injuries from the internal causes, before mentioned, present, such neglect or abuse will be very slow to produce an entire destruction of the dentine, or even the decay of an occasional tooth. Where is the practitioner of half a dozen years' experience who has not seen beautiful dentures of that iron texture, without spot or blemish, save a slight abrasion of the edges, where the possessor can boast of his ability to "clip in half" a ten-penny nail! and this, too, with the other boast, of never having touched their teeth with a brush. The Irishman and German often present such developments, but they are rarely seen in the more modern and fashionable circles of American life.

Much, too, has been said and written about "acids" and "alkalies" as they come up in the various kinds of food used by our modern epicures. Those deductions and conclusions, we think, are very much strained and largely over-estimated. When mixed and baked, and boiled and cured, they come in connection

with the teeth as entirely different chemical compounds; their influence, therefore, being no longer acid or alkali, there can be n deleterious effects, especially regarding the fact that they are held so short a time in contact with them.

Much of the distress, however, occasioned by the above enumerated agents, can be prevented, or at least modified, by a proper system of hygienic treatment. In order properly to meet all the contingencies necessary, and to comply regularly with the suggestions of science in the work of raising and preserving good, enduring and substantial teeth, the dental practitioner should have control of the process of dentition from infancy, and much of the manner of the child's living. The eruption of these organs should be attended with special care, and when they are fairly developed and erupted, frequent inspection and good sanitary directions, with all the treatment which the nature of the case might seem to require, you meet in a scientific way all the demands of what we understand by the term "dental hygiene."

There was no discussion upon the subject of this essay.

The election of officers being next in order, Drs. McCalla and Templeton were appointed tellers, and, on ballot, the following officers were declared elected for the ensuing year:

President.—Prof. T. L. Buckingham.

First Vice President.—Dr. G. B. McDonneld.

Second Vice President.—Dr. James Fleming.

Recording Secretary.—Dr. George W. Neidich.

Assistant Recording Secretary.—Dr. W. N. Amer.

Corresponding Secretary.—Dr. Samuel Welchens.

Treasurer.—Dr. John McCalla.

Board of Censors.—Drs. A. B. Robbins, W. K. Brenizer, H. H. Martin, H. Gerhart and W. N. Amer.

The president elect then appointed the following committees:

Publication Committee.—Prof. James Truman, Drs. McCalla, T. C. Stellwagen, J. L. Suesserott, J. W. Moffitt, Samuel Welchens and George W. Neidich.

Executive Committee.—Drs. J. G. Templeton, .G. B. McDonneld, A. B. Robbins, J. G. Moore and Prof. James Truman.

The following delegates to other societies were also appointed:

To the American Dental Association.—Drs. G. B. McDonneld, H. H. Martin, J. W. Moffitt, W. H. Scholl, Samuel Welchens, James Fleming, A. B. Robbins and H. Gerhart.

To the Ohio State Dental Society.—Dr. J. G. Templeton.

To the New York State Dental Society.—Dr. A. B. Robbins.

The physicians and dentists of Harrisburg were, on motion, invited to be present and participate in the proceedings.

Prof. T. L. Buckingham was requested to deliver a public address at the next meeting of the society, in Pittsburg.

Adjourned to meet at 9 o'clock A. M. to-morrow.

WEDNESDAY MORNING.

JUNE 9, 1871.

The society was called to order by the president.

The "bill to regulate the practice of dentistry" was taken up. After a thorough and earnest discussion, in which a strong feeling was manifested in favor of such legislation, it was resolved to make another effort to have the bill passed. It was committed to Drs. Robbins, McCalla, Martin, Fleming and Prof. Buckingham, who were directed to make whatever changes they deemed necessary, and present it to the Legislature at its next session.

On motion the society recognized and adopted the essential features of the code of ethics of the American Dental Association.

The subject of the irritation of the mucous membrane, and the constitutional effects of vulcanite rubber plates, was then discussed with much interest.

Dr. Welchens, in opening the discussion, said that he had several cases presenting abnormal conditions of the mouth, but he could not believe that the deleterious effects arose from the use of the rubber plate. The nature and character of the rubber, after it is vulcanized, would preclude the idea of the mouth being poisoned with it; had made many delicate tests, and could discern nothing harmful or poisonous in it.

Prof. Buckingham had observed in many specimens of rubber, under the microscope, a metal which he believed to be mercury.

Dr. Moffitt mentioned a case in his practice where, in wearing a rubber plate, the mouth became inflamed and ulcerated. He advised a discontinuance of the use of the plate, when the disease disappeared. The patient and himself not being satisfied,

the plate was again inserted, and with the same result as before. Afterward a platina plate was inserted and worn with entire satisfaction.

Dr. McDonneld had observed that food was much more liable to remain on the surface of a rubber plate than on one of metal. When persons are uncleanly in their habits this irritation is much more liable to occur with the former than the latter.

Dr. Moore entertained the opinion that the irritation of the mucous membrane was caused by the foreign particles of matter adhering to the plate.

Dr. Hoffer, being a homeopathist in belief, regarded the infinitesimal amount of mercury present would certainly have a constitutional effect.

Dr. Wert had a case where the membrane was very much inflamed, but he attributed it to the plate not being vulcanized as hard as it should have been. He had never seen any irritation where the mucous membrane was naturally hard and healthy. He had noticed similar irritation in the mouth from silver plates.

Prof. Buckingham explained that when the effect was merely a local one, he did not place much importance to it. He referred more particularly to constitutional effects, with unmistakable symptoms of ptyalism.

Dr. McDonneld considered the non-conducting properties of rubber as a strong argument against its use.

Dr. Robbins had found in several cases unmistakable evidences of mercurial action in the mouth and fauces—discontinuance of the use of the plates restoring the normal action.

The discussion on the rubber question here ended.

Dr. Robbins presented casts of an interesting case of irregularity of the teeth, in which they were placed in their proper positions in the arch the contour of the face greatly improved, and a slight impediment in the speech entirely removed, and explained his method of operating in the case.

The president elect, Prof. Buckingham, then assumed the duties of his office, being conducted to the chair by Drs. McCalla and Templeton, and, in a brief speech, thanked the society for the honor conferred upon him.

On motion a vote of thanks was extended to the retiring president for the admirable manner in which he had conducted the proceedings of the society.

Drs. McDonneld, Templeton, McCalla and Suesserott were appointed essayists for the next meeting, and requested to inform the corresponding secretary of their subjects, that the members might be notified, in order to make preparations to participate in the discussion which it is expected will follow each essay.

An essay was read by Dr. Geo. W. Neidich, on the "Histology of the Dental Tissues," which was well received and a vote of thanks extended. This essay was also referred to the publication committee without discussion.

The following amendments to the constitution were proposed by Dr. A. B. Robbins. 1st. That Art. XI. be amended by substituting "the members present," for "a full quorum." 2d. That a new article be added, to read thus: "*Certificate of Membership.* Any member of the Pennsylvania State Dental Society may, upon passing a satisfactory examination by the censors, receive a certificate constituting him a Fellow of the Pennsylvania State Dental Society, under seal, signed by the censors, president and secretaries of this society."

Prof. Buckingham was instructed to procure an appropriate seal for the society.

Adjourned to meet in the city of Pittsburg on the third Tuesday of June, 1871, at 10 A. M., the session to continue three days.

SECOND ANNUAL MEETING

OF THE

PENNSYLVANIA STATE DENTAL SOCIETY.

The second annual meeting of the State Dental Society of Pennsylvania was held in the Board of Trade rooms, in the city of Pittsburg, at 10 o'clock, Tuesday, June 21, 1870.

The president, Prof. T. L. Buckingham, being absent, Dr. George B. McDonneld, first vice-president, assumed the duties of the chair.

Members present—Drs. A. B. Robbins, Samuel Welchens, George W. Neidich, John McCalla, J. G. Templeton, Wm. Nichols Amer, J. Z. Hoffer, E. M. Pierce, G. B. McDonneld, M. H. Webb and Prof. G. T. Barker.

A majority of the board of censors being absent, Dr. John McCalla was elected to act as censor, *pro tem.*

The board of censors report having examined the constitution and by-laws of the Pittsburg Dental Association, and find them in harmony with the constitution of the State Dental Society. They recommend that Articles III. and XIV. be so amended as to admit none to membership except dentists in regular practice and of good standing. They also report the credentials of the following delegates from their respective societies as being satisfactory, viz.:

From the Lake Erie Dental Association.—Drs. C. D. Elliott, C. B. Ansart, C. H. Bagley, George J. Luce.

From the Pittsburg Dental Association.—Drs. M. E. Gillespie, James S. King, H. W. Arthur and J. D. White.

From the Harris Dental Association.—Drs. D. R. Hertz, J. S. Smith and A. F. Herr.

From the Pennsylvania College of Dental Surgery.—Prof. George T. Barker.

Report accepted, and the above delegates, on signing the constitution, were declared members.

An address of welcome was delivered to the members of the State Dental Society by Dr. James S. King, on behalf of the dentists of Pittsburg and vicinity, which was replied to by Dr. Samuel Welchens for the State Dental Society.

The board of censors further report the credentials of Dr. James Orr, from the Pittsburg Dental Association, as entitling him to membership.

The executive committee recommend that the sessions of the society, during the meeting, shall be from 9 to 12 A. M. and from 2½ to 5½ P. M.; that a public address be delivered on Wednesday evening at 8 o'clock; that Thursday morning be devoted to clinics, operative and mechanical, together with the presentation of cases, instruments and appliances. Report accepted, and recommendation adopted.

The publication committee report having examined and published all essays and papers that were placed in their hands.

The delegate to the New York State Dental Society, Dr. A. B. Robbins, reports having been unable to attend that body. Dr. J. G. Templeton, delegate to the Ohio State Dental Society, also reports non-attendance, on account of absence from home. Dr. George B. McDonneld, delegate to the American Dental Association, reports having attended the meetings of that body, and that the interchange of opinions and sentiments have been very agreeable and instructive.

Adjourned until 2½ o'clock.

Afternoon Session.

The special committee appointed for the revision and presentation of the bill to the legislature, report that they had prepared a bill, such as they judged would be acceptable to the profession, and would accomplish the desired end, or at least be a basis upon which further legislation might be secured. They advanced a step over last year, by having it reported from the executive committee to the House, but failed in securing its passage; yet at the same time feel encouraged to continue the effort. The committee recommend that an appropriation be made to continue the application. Report accepted, and committee discharged.

On motion, a new committee, to consist of Drs. Robbins, McCalla, Moffitt and Martin, was appointed, to continue the application of this society for legislative enactments to improve the profession, with power to draw upon the treasurer for funds necessary to prosecute the work.

The amendments to the constitution, proposed at the last annual meeting by Dr. Robbins, were next considered, and, on motion, the first amendment was adopted, viz.: "That Article XI. be amended by substituting 'the members present,' for 'a full quorum.'"

The second amendment, viz.: "That the constitution of the State Dental Society of Pennsylvania be amended by adding the following article: 'Any member of the State Dental Society, in good standing, may, upon passing a satisfactory examination by the censors, with the approval of the society, receive a certificate constituting him a Fellow of the State Dental Society of Pennsylvania, under seal signed by the censors, president and secretary,'" was ordered to lay over until our next meeting for consideration.

The committee appointed to procure a seal for the society being absent, and unable to report, was discharged, and a committee of three, viz.: Drs. Welchens, Robbins and McCalla, appointed to procure such seal before the next annual meeting.

By a vote of the society, the order of business was suspended, and the election of officers postponed until Thursday afternoon.

The place for holding our next annual meeting being in order, Lancaster and Gettysburg were proposed, and, by a vote of the society, Gettysburg was chosen.

Letters were read by the secretary from Drs. W. A. Breen and M. Lukens Long, asking to withdraw from the society. On motion, their requests were granted.

The board of censors report favorably on the credentials of Drs. S. Davis and W. E. Magill, of the Lake Erie Dental Association, and, on motion, they were declared members.

The treasurer was ordered to pay all bills incurred for the use of the society, properly signed and countersigned.

Prof. George T. Barker described a method of using rubber, by which the hard rubber patent might be avoided. His plan was, by using soft rubber, or the ordinary rubber, partly vulcanized, for the plate; the teeth being secured by arches of tin fastened to the pins, and extending around the inside of the teeth. He stated certain improvements which would have to be made before it would be practicable.

The experience of the members was called for in reference to whalebone rubber, and those who have tried it consider it an improvement on the ordinary rubber.

Wednesday Morning.

The minutes of yesterday read, corrected and approved.

The recording secretary was directed to read the constitution and by-laws, for the benefit of new members.

On motion, the clergy, physicians and dentists of the city, were invited to attend all the sessions of this body.

The following essay was then read:

ON THE EXTRACTION OF TEETH.

BY JOHN M'CALLA, D. D. S.

The proper treatment of any of the ills which afflict humanity should be the subject of patient and scientific research on the part of every one connected in any way with the healing art. This is

no less true of the dental than of the general surgeon. The organs with which he has to deal, are most intimately connected with nerves which throb with the keenest agony in suffering, or thrill with the most delightful sensations of pleasure and enjoyment in health. How skillful, then, should be the hand, and perfect the knowledge of the operator whose field of labor lies so near to the sensorium of the system. We are apt to suppose, in this enlightened age, that a higher point has been attained on the steep declivity of the hill of science, than our predecessors ever reached, and while we admit that rapid strides have been made in this direction, let us not forget the fact, that long before the beginning of the Christian era, the reputation of the Egyptian physicians and surgeons extended throughout the then known world; the monarchs of Persia and other countries for many ages employed them alone. The prevalence of ophthalmia and other diseases of the eyes in these countries, gave medical men ample scope for the exercise of their art, and thus a degree of proficiency was acquired, which caused the Egyptian oculist to be considered the most fitting offering one sovereign could make to another. Dental maladies, on the other hand, were seldom met with in Egypt, and it is to this cause, no doubt, that we may attribute the general silence of authors respecting their proficiency as dentists. It is well known that a carious tooth is seldom to be met with in any of their ancient mummies. Herodotus, the first Greek historian, says, "The art of medicine is so practiced in Egypt, that there is found an individual healer for each individual distemper. Hence the whole country is filled with healers; some take charge of the disorders of the eyes, others of those of the head, others of those of the *teeth*, others of those of the belly, and others of secret diseases." From the hereditary character of these several offices, we may imagine that a high degree of proficiency would be acquired in the various specialties.

The ancients, we find, were generally opposed to the extraction of teeth, and advise various remedies instead, such as plugging with lead (plumbing), plugging with iron, galbanum, wax, the application of the actual cautery, the wearing of charms, &c. When the operation was deemed imperative, a serrated instrument, called by the Greeks rizagra, was first employed to shake or loosen the tooth; the head of the patient was then placed between the knees of the operator, in order to keep it steady, and should the

tooth not come out readily, a kind of hook or lever was inserted under it, on all sides, so as to raise it a little, before again attempting its extraction, when the operation was completed by pulling it perpendicularly. The best received authorities of the day recommend great hesitation and precaution before proceeding to the extraction of teeth.

Coelius condemns the inconsiderate extraction of teeth, and urges, above all things, "that care should be taken in the removal of those that are firmly fixed, as the adjacent parts, particularly the eyes, are always affected by the operation, and frequently it is not only one tooth, but the entire jaw which aches, in such a manner as to render it necessary to extract all the teeth, in order to obtain relief." Another states that when a tooth which is loose or painful is to be extracted, "the nose of the patient should be rubbed with brown sugar and ivy and green oil; he is advised to hold his breath, a stone is then placed between his teeth, and he is made to close his mouth; the fluid which causes the pain is then seen to flow from the mouth in such quantity as frequently to fill three pots; after having cleansed the nose with pure oil, and rinsed the mouth with wine, the tooth is no longer painful, and may be easily extracted." "To preserve one's self to a certainty from toothache, it is only necessary, at the return of the swallow in the spring of the year, to repair silently to the border of a clear rivulet, take some of the water in the mouth, and rub the teeth with the forefinger of both hands, and repeat a certain form of words. Another recommends that the roots be anointed with flour and the juice of tithymal, after which the teeth will fall out."

In pursuing the subject of extraction of teeth, allow me to offer a few remarks on the instruments employed for that purpose, both ancient and modern; note some of the most important improvements, and point out the style of instrument which, from long experience, I have been led to prefer, and, as far as practicable, show the mode of applying them to the teeth to be removed.

Among the first instruments of which we have any account, is the *vulsella*, described by Celsus, about the commencement of the Christian era; it is said to have been a kind of forceps, the beaks resembling the bill of a parrot; this instrument, with slight alterations, came in time to be known as the hawksbill forceps, or *davier* of the French, and in connection with various levers and punches, continued in use for several centuries. The *elevator*

next succeeded the forceps, and if we may judge from the description given of the method of using it, we shall be forced to the conviction that the operation of extracting teeth lost none of its terrors by the change. Following this, we have an instrument similar in its action to a key, furnished with claw and fulcrum, but lacking the power and safety of the latter. Among the levers employed, we find the *peid-de-biche* (hind's foot), *langue-de-carp* (carp's tongue), or *trevelin* of Lecluse, for the extraction of roots: it is a curved lever, terminating in a bayonet point, and was said to be a perfect instrument for the extraction of wisdom teeth, by placing it between it and the second molar. Another, called the lever *a-crochet-et-a-plague* (the lever with hook and plate), bears ome resemblance to the key, though much inferior to that instrument. The *pelecan*, an instrument formerly much in use, was furnished with a lever, fulcrum and claw, and approximated more closely to the key than any of its predecessors. In the early part of the 18th century, the *key* instrument, invented by Garengeot, came into use; the facility of acquiring command of this instrument, and the amount of force it was capable of exerting, soon brought it into general favor, and it must be admitted that where but one instrument could be obtained, none would answer all purposes as well as the key; its defects were sought to be remedied from time to time by the ingenuity of Van Butchell, Spence, Saviny, Duval and a host of others; to the last named gentleman we are indebted for the introduction of the movable fulcrum, one of the most valuable improvements which this instrument has undergone.

To Mr. Cartwright, of London, we are indebted for the first return to the use of the forceps; he so improved them as to enhance very much their efficiency, and about the year 1830 first brought them to public notice; they soon came to be regarded as safer and more reliable than the key. Mr. Snell, taking up the idea of Cartwright, soon followed in the line of improvement, by adapting the beaks to the necks of the different classes of teeth, by means of nibs, grooves and crescents, and added to the better application of the extractive force, by bending one of the handles so as to pass round the hand of the operator, thus preventing the liability of slipping. Dr. J. F. Flagg, of Boston, is entitled to the credit of an improvement in the hawksbill forceps, which consisted in more accurately adapting its form to the necks of the

teeth, and at the same time giving a shape and position to the handles, which would enable the operator to apply the necessary power to greater advantage. A further improvement on Snell's instruments, by Prof. C. A. Harris, consisted in such a change of the handles, as brought the motive power, or hand, nearer on a line with the long axis of the tooth, while the change in the angles and curves enabled the operator to bring the hand nearer to his chest, and under the instrument, thus giving greater command over it, without any loss of power.

Dr. Edward P. Church supplied a want long felt by the profession, in the invention of forceps forming two nearly right angles, above the joint, for the extraction of the superior wisdom teeth.

Dr. J. W. Crane, of New York, invented two pairs of forceps for the extraction of lower molars: one for the first and second, on either side, and the other for the wisdom teeth.

Dr. Hullihen's compound screw forceps, for the extraction of the roots of incisors and canine, in the upper jaw, you are all familiar with.

To Dr. E. Maynard, of Washington, D. C., we are indebted for forceps designed for the removal of the roots of upper molar teeth, before they have become separated from each other; there are two pairs, one for each side of the mouth, and though not often brought into requisition, they are admirably adapted to the class of cases for which they are intended.

Dr. Elliott has furnished an instrument for the extraction of the roots of molar and bicuspid teeth; but of its merits we are not prepared to speak.

The forceps bearing the name of Dr. Physick are found to be very useful in separating the roots of lower molars previous to their removal; they have been highly spoken of by some operators for the extraction of lower wisdom teeth.

John Tomes, of London, claims to have made valuable improvements in tooth forceps.

Mr. Fay and Mr. Matthews, both of England, introduced, some years ago, what was known as the *adjusted forceps;* they were brought to notice by both these gentlemen about the same time, neither being aware of the other's improvement. The advantages possessed by these instruments consist in their anatomical adaptation to the neck and crowns of the several classes of teeth, and this we regard as a *sine qua non* in the fabrication of dental forceps.

The importance of starting out in the profession with good instruments cannot be over-estimated. With those first adopted we become most familiar from daily association, and while their defects may be numerous and radical, we are sometimes slow to recognize and correct them. I have met with instruments for extracting teeth, in the cases of both physicians and dentists, that would set at defiance all the known laws of mechanics, and overmatch the ingenuity of the most skillful artisan to adapt them to any useful purpose. Our advice invariably in such cases is, throw them away, put them beyond your reach, and thus reduce the chances of fracture and other unpleasant complications. It is too frequently the case that young beginners procure such instruments as are pointed out to them, or take up those of some one retiring from practice, and seldom or never entertain the idea of improvement. We are happy to say, however, that this is not the rule; valuable improvements have been made from time to time, and the results of a combination of these are now to be found in the hands of a large portion of the operators of the present day. The most important requisites in forceps we conceive to be: 1st. A proper adaptation of the beaks to the necks and crowns of the teeth. 2d. The handles should be as near on a line with the longest axis of the tooth as possible, yet sufficiently bent to avoid coming in contact with the opposite jaw. 3d. The length of the handle should conform to the hand of the operator; long handles are particularly objectionable. 4th. The handles should be bent in such a manner as to place the operator in the most favorable position in relation to the patient. This is generally conceded to be on the right side, or right and rear. The head is best controlled in this position.

To insure success in the extraction of teeth, a careful diagnosis is of the first importance; an accurate acquaintance with the normal and pathological conditions of the teeth and their surroundings, and a sound judgment in relation to the obstacles to be encountered, is calculated to inspire the operator with a confidence in his own practical abilities, which will enable him to meet the physical indications in each individual case.

Another object to be aimed at is to gain the confidence of the patient. A kind and affable demeanor on the part of the operator, accompanied with candor and firmness, will seldom fail to accomplish this object. All unnecessary display of instruments

should be avoided, and the surroundings of such a character as to allay the fearful apprehensions of the weak and timid. These conditions being complied with, we are now prepared to select the instrument best suited to the case in hand.

For the removal of the upper incisors, the instrument most frequently employed has straight beaks, and on a line with the handle, both blades grooved and crescent-shaped at point; to conform to the necks of this class of teeth, the bowl or beaks should be sufficiently separated to admit the crown without pressure, as the object should be to grasp the tooth at or above the neck, in order to secure the best results. It will be found most convenient to have the lower handle bent, to pass round the little finger of the operator; the motion which I have found most effective in the removal of these teeth is the downward, or inward, after a slight rotary movement; the alveolus being shorter and thinner on the inner side, the attachments are more readily sundered by a motion in this direction. The instrument which I prefer for extracting the upper bicuspids differs from the one just described, in having the beaks narrower, and bent at an angle of about forty degrees, with straight handles; to give the necessary strength to this instrument, we should add to the thickness of the beak what it lacks in width. One instrument answers for both sides of the mouth. The rotary motion is inadmissible in the removal of these teeth, owing to their conformation and position; the outward and inward motions should be given, particularly the latter. The value I set upon this instrument may be estimated when it is known that I use it for all roots in the upper jaw, after they have become separated from each other, and not unfrequently have extracted all the upper incisors, canine and bicuspids, with it alone.

The upper molar teeth having three roots, two buccal and one palatine, instruments for their extraction should be constructed to meet this anatomical arrangement; hence the necessity for two pairs, right and left, straight handles, and the beaks sufficiently wide to take in all the crown, and bent at an angle of about forty degrees; the point of the inner beak should be curved, so as to embrace closely the palatine root, while the outer one requires a double groove, terminating near the center in a strong, sharp nib. In arresting the tooth, this nib is forced into the depression between the buccal roots, when the inward and outward motion is

given, and the organ dislodged. I prefer to have one of the handles curved, as in the incisor instrument.

The forceps previously noticed as the invention of Dr. Church are well calculated for the extraction of the upper wisdom teeth; the beaks are parallel with the handles, but removed about one inch from the same line by means of two angles above the joint; the points are both crescent-shaped. It is but seldom that we meet with a divergence in the roots of these teeth, hence the nib is not required. This instrument answers equally well for both sides of the mouth.

Passing to the lower jaw, we select an instrument for the removal of the incisors, canine and bicuspids, similar to the one employed for the upper biscuspids, the only difference being in the angle of the beaks, that of the upper being about forty degrees, while the one now under consideration has an angle of sixty degrees at least; the handles straight, and beaks narrow but stout. With this instrument I remove the ten anterior teeth in the lower jaw, and all the roots of the lower molars after they have become separated from each other.

For the extraction of the lower molar teeth, one instrument is sufficient for both sides of the mouth. These teeth having two roots, both beaks of the forceps should be furnished with stout nibs, to penetrate the bifurcation; holding the instrument in the right hand, as if about to use it, and taking the shank, or joint, as the base, we have the handles bent toward the left hand of the operator at an angle of forty degrees, while the beaks present the same angle, in a forward direction, one handle bent around the hand, and the bowl to conform with those previously described. This instrument I regard as decidedly the best I have ever met with for the class of teeth for which it is intended.

For the extraction of the inferior *dens sapientia*, an instrument with straight handles is to be preferred; the beaks slighly narrower than those last named, and bent at an angle of about sixty degrees, both points crescent-shaped; the shank should be as small as is consistent with the required strength, in order to afford a full view of the parts to be operated upon; as the roots of these teeth usually turn back into the ramus of the jaw, to a greater or less extent, it becomes necessary to have other appliances at hand, to meet the emergencies. The Physick forceps may occasinally be found useful here. I have not employed them to any considerable

extent for this purpose. A stout lever, with angles similar to those of the upper wisdom forceps, will be found very valuable, introduced behind the second molar; the force should be applied to the wisdom tooth in an upward and backward direction, following every movement with the eye, in order to guard against forcing the tooth into the throat of the patient.

Having now described all the instruments necessary for the *ordinary* operations of extraction, let me call your attention to some of those employed for *extraordinary* cases; and first, for the removal of the upper incisor and canine roots, we have the conical screw, compound screw forceps, punch and gouge. I have tried them all, but for a number of years past, have depended almost entirely upon my upper root forceps. Where the crowns of upper molars have been broken off, or removed by caries, yet an unbroken connection remains between the roots, I have found the instruments invented by Dr. Maynard to excel all others that I have met with. The upper beak forms a sharp, strong hook, bent in such a manner as to be made to readily pass through the junction of the roots, while the lower beak is similar to those of the upper molar forceps; the motion is downard or inward, readily wrenching the organ from its attachments; or when the union between the roots is too slight to resist the force, a separation takes place, when they are readily removed by the upper root instrument. Where the same conditions exist in relation to the lower molars, I resort at once to the Physick forceps to separate the roots, and then remove them with the lower root forceps. It is sometimes necessary to extract teeth on account of their irregularity. Where three stand together in a group, it will be found that narrow, strong beaks are indispensable; the locality of the deviating organ will at once suggest to the mind of the operator the form of instrument best calculated to remove the difficulty.

I have not thought it necessary to occupy your time with any remarks in regard to the extraction of deciduous teeth. I have but one instrument specially devoted to this class; it is a small pair of forceps from the manufactory of Charriere, of Paris. They are the neatest, most convenient, and best adapted forceps I have ever met with, for the removal of deciduous molars; for all other teeth of the first set, I depend upon those already described.

A diversity of opinion exists in regard to the propriety of lancing the gums as a preliminary to extraction. It is contended by some

that the attachment of the gum to the neck of a tooth is always but slight and the extent inconsiderable, and that therefore its severance can have little or no influence in lessening the amount of force required in extraction. Again, it is admitted that there is a difference; that the gums should be separated from the teeth before removal; but for this purpose it is suggested that sharp forceps, driven forcibly into the gums, does the work more thoroughly, and is attended with no more pain than that produced by the lancet. Without stopping to combat these opinions, allow me to say, that I regard the lancet as one of the most important instruments in my case. I do not invariably employ it, but it is my practice to lance well, and I do contend that no timid hand should guide the blade. If the instrument is carefully kept, with a smooth and keen edge, the pain attending its use is inconsiderable, and more than counterbalanced by the increased facilities afforded for the expeditious and safe removal of the offending organ. The common, thin, flat handle is liable to turn in the hand; I have found an octagon handle less liable to do so, and much to be preferred.

And now a word as to the relative position of operator and patient. This is a matter concerning which no rules can be laid down. The form of instrument employed controls the operator in a great degree as to the position he assumes. With instruments of the hawksbill variety, the operator is compelled to follow the inclination of the instrument, sometimes on one side of the patient, and sometimes on the other; while with the instruments here described, the operator is never required to leave the right side of the patient. and is thus the better able to control the head with his left hand. The only deviation from this rule is in the extraction of the right inferior bicuspids and wisdom tooth, when he turns and faces the patient, though still retaining his position on the right side. Another important point is to have the operating chair neither too high nor too low. In a word, the surroundings must be such as will best enable us to command the situation; for this purpose I have two small, separate platforms, each about four inches in height, placed one upon the other, at the back of my chair; the upper one is easily moved by the foot, and is always ready in time of need. In extracting from the lower jaw, we get upon one or the other of these platforms, as the case may require; while, in operations in

the upper jaw, we remain on the floor, or mount the first platform, if need be. To be able to distinguish promptly the requirements in each case that presents itself, includes not only a thorough knowledge of the buccal cavity in health and disease, but a familiarity with the various forms of instruments, and their modes of action. In this way alone can we acquire that manual dexterity which should ever distinguish the accomplished surgeon.

The subject of the essay was opened for discussion by Dr. Magill, who considers simplicity in instruments desirable; uses as few instruments as possible; advocates a low chair, and desired to do his work quickly; position was everything; wants to be master of the situation; does not recommend lancing of gums, except for going through the process, and in that case makes a vertical incision only.

Prof. Barker said the operator should study the law of forces; did not think strength so necessary as a correct application of the force; thought the proper use of the upward or downward force one of the elements of success; the alveolus should be crowded out of the way; advocated but one instrument when practicable, particularly when administering anæsthetics.

Dr. Gillespie said, while general rules might be given for the performance of the operation, yet there are cases which must be decided upon at the time by our good judgment; thought lancing not generally necessary, except at the posterior side of the wisdom teeth; advocated Physick's forceps for the *dens sapientia*.

Dr. Robbins suggested that, in connection with this subject, we should discuss the subject of when to extract.

Dr. Magill related a case of what he supposed to be neuralgia, but found, after extraction, to be ossification of the pulp; he inquired of the association if there were any reliable symptoms accompanying exostosis and ossification of the pulp.

Prof. Barker said pain from exostosis is never permanently relieved by topical applications, sometimes temporarily by cold water; wished the society to pass a resolution that no tooth should ever be extracted which might be made serviceable to the patient; that the wishes or present feelings of the patient should not be considered; wished this society would stigmatize the wholesale

destruction of the natural teeth. Prof. Barker offered the following resolution:

Resolved, That it is the judgment of this society, that no teeth should ever be extracted which, by proper treatment, may be made serviceable to the patient.

On motion, adopted by the society.

The following essay was then read:

MECHANICAL DENTISTRY.

BY DR. J. G. TEMPLETON, D. D. S.

The restoration of the organs of mastication by artificial means, comprises by far the greater part of the art implied under the term of "mechanical dentistry," which we have chosen as the subject of a few remarks, in the form of an essay, that may serve as the beginning of a discussion upon a subject forming an important part of our specialty—though much neglected at the present time by many of the best minds in the profession, the consequence of which is, that one particular branch of the science of dentistry has outstripped all the rest in the scale of advancement, while that under consideration has been left, for the most part, to be performed by unskillful and unscrupulous pretenders, calling themselves dentists, who, in some parts of our country are so esteemed by the public, and considered equal to the best men in the dental profession, which is the direct result of a want of knowledge on the part of the masses of the people, as to the proper qualifications of a dentist; hence the mountebank finds a ready market for his stock in trade.

In order to change this state of things, we must not only educate the public mind in regard to the training necessary for the dentist, but we must give to mechanical dentistry that attention which its importance demands, and not allow the wishes or opinions of our patrons to intimidate us from recommending those materials to which the quack is a stranger, and the proper manipulation of which cannot be learned in a few days.

In the discussion of this subject, we shall confine our remarks to the objects to be gained in the insertion of an artificial denture, and the means of its accomplishment; and next, the merits of the different materials that are or have been used as a base for artificial teeth.

And first, the object to be gained other than the mere insertion of an artificial denture, so that it shall suffice the purposes of mas-

tication and articulation, should be the restoration of the features, as near as possible, to that natural expression of countenance of which the patient has been deprived by the loss of the natural organs, and the absorption of the alveoli.

To successfully perform this very important part of mechanical dentistry, the face of each patient must be studied with greater precision than is required of the portrait painter, whose only object is to produce a picture of the face as it is, while the dentist must and is expected to reproduce the face to its original contour, which requires more ingenuity than that exerted by the photographer, who merely catches the shadow of a face, prints it upon paper, and *he* is called an *artist*.

The artistic reproduction of the desired natural expression, is effected by moulding a wax plate upon the plaster model, and trimming so that it shall fill up sunken parts when placed in the mouth, when the expression of the countenance is to be noted, as also the proper length of the teeth required; and if, after thus experimenting, any change is deemed advisable, it can readily be made upon the wax plate, and the effect observed on replacing the wax in the mouth; then, if satisfactory, the bite is taken on the wax plate, from which models are made, on which to arrange and antagonize the teeth in such a manner that they shall correspond in contour to the wax plate.

Having proceeded thus far, the next consideration is what materials are best adapted to our purpose; then, if the case is a partial set of teeth, we would use a gold plate, upon which we would mount block teeth carved expressly for the case, though in such cases we can usually accomplish all the restoration necessary by using the single teeth, such as are furnished by the manufacturers; and here we take occasion to say, that in no case would we recommend any other material than gold for a partial set; and if our patient was not willing or able to pay for the gold, then we would advise the use of a plate of pure silver alloyed with platinum, as the next best material.

Our reasons for advising these materials for all partial cases are, that they possess greater strength and occupy so much less space in the mouth, and also afford a much better return for the money expended by the patient, being more durable than the so-called cheap material much used at the present time.

Again, we will suppose that our case is a full set, to be inserted

on a gold plate ; then the necessary amount of restoration cannot always be effected by using the common, plain or single gum teeth. Such cases are often most beautifully supplied with blocks carved for the case, and soldered to the plate, the artistic effect thus being at the will of the operator.

While gold as a base is admirably adapted to the purposes of the artistic or mechanical dentist, yet we cannot award to it the highest place as a base for full upper or under sets of teeth—"the want of cleanliness being a serious objection to its use, which is only impefectly overcome in the combination of gold and hard rubber."

In "Allen's Continuous Gum Work," we find our ideal almost perfectly attained by its use. A very complete restoration of form and substance can be accomplished, as the porcelain body and enamel can be built upon the platinum plate to any desired shape or degree of fullness ; we also get rid of that stiff, regular, artificial appearance of the teeth, as they can be arranged in any position which the taste or judgment of the operator may suggest, to secure a pleasing expression.

While speaking of continuous gum work, it is with pleasure that we recommend to your favorable notice a modification of the same, by Dr. Moffit, of Harrisburg, Pa., which he offers to the profession under the name of the "Non-sectional Block Work," and free of charge to all who will use it—a degree of magnanimity not usual among inventors of the present day and generation.

In many parts of the country, the porcelain or mineral base is still growing in favor; for strength, beauty and cleanliness, it is not surpassed by any class of work yet introduced to the profession. The natural expression of the mouth, as well as the contour of the face, can be restored by it, as well as with continuous gum work, so justly popular; and, unlike the latter, it can be ground away, if it should be found too full in any place after it is baked, and afterward covered with a coating of gum, that will fuse at a lower heat than the gum previously used.

As a general rule, an upper set can be ground to a cast of the mouth in about the same time that will be required to grind a set of blocks for rubber work. When it comes from the furnace it is ready for the mouth, except the grinding; therefore; there is no filing, stoning, or lathe work required to finish it.

We have been situated where we could observe the success of

this class of dentures for the last twelve years, and think (though, in most cases, in the hands of incompetent men) it has given good satisfaction to their patients. Being a good conductor of caloric, the mouth keeps as cool and healthy as with gold or continuous gum work, and it is not as heavy as either.

The next and last material which we would recommend for the purposes of restoration, is vulcanized rubber. The ease with which it can be manipulated to obtain the desired result constitutes, in our opinion, the only reason why it should be used; which, in connection with the low price at which it can be obtained, and at which it is served out to the public at large by the many would-be and so-called dentists of the present day—themselves the creature of its introduction—constitutes the main reason for its almost universal adoption as a base for artificial teeth.

One great objection to inserting such a mass of rubber as would often be necessary in restoring contour, is the deleterious effect it has upon the mucous membrane in the mouths of a great many persons, caused by its non-conducting properties. This brings us to the true explanation of the mischief wrought by vulcanite—not because it has failed to sustain the promise of usefulness it first gave, for its merits are such that, for certain important uses, its place cannot be supplied by any other known material; not because of the annoyances of the Goodyear patent agents—although these are serious enough and have led to much demoralization—but because dentists themselves have failed to recognize the true value of the material, and they have made an incidental quality its prominent advantage, and their real motive for using it, namely, its cheapness.

They have used it thus in that underbidding of rival practitioners, which is the burning disgrace of dental practice. They have advertised their cheap wares to the world till the community looks upon vulcanite as a material which costs nothing, and think that the work spent upon it has not much more value: whereas, ten years ago they could scarcely overcome a patient's prejudice in favor of gold, now they have so thoroughly demoralized the people that they will not have gold when the necessity of the case requires it.

Were it merely a question of cheapness it would not be so serious, for it is a maxim of political economy, that he is a public benefactor who reduces the cost of articles of necessity; but it is

no benefaction when the value is reduced in like proportion, and it becomes an imposture when the value is still more reduced. Cheap dentistry is like dollar stores and gift enterprises—you may possibly get the value of your money, you most probably will not. Now and then a dollar may buy ten dollars' worth, but in the long run the inevitable laws of barter will prevail, and the dollar will only buy the dollars' worth.

There is no more certain law than that cheap work leads to bad work. If proof of this were needed in dentistry, look at the shapeless, inartistic, badly-fitting lumps of rubber stuck over with stareing bits of porcelain, which issue from a thousand dental offices—*false teeth*—most appropriately so named; false to every idea of truth, beauty and fitness; made by men false to their own self-respect and dignity, in permitting themselves to be thus disfigured and made ridiculous.

A dentist who is mean enough to get work by underbidding, will be dishonest enough to make it correspond to the price; and this has come to be a common, and, alas! an accepted excuse for not doing what the case requires: "I cannot afford it at the price I get." Hence, cheap dentistry is dishonest dentistry, when the price is such as to prohibit the fullest exercise of the skill.

A dentist who works at prices which demand unceasing toil to earn his daily bread, leaves himself no time for mental culture; his work becomes a drudgery, in no respsct more elevating than that of a common day laborer. Hence, cheap dentistry is degrading dentistry.

We sum up our charge against vulcanite—or, more correctly, its abuse—in that its cheapness and a certain facility of construction has tended greatly to foster cheap dentistry, and so make the dental art slovenly, dishonest and degrading; it has been so used as to lessen the demand for art and skill, and to encourage a community to prefer economy to artistic workmanship.

Let us hope, that when specie payments shall have been resumed in our country, cheap vulcanite work will have breathed its last, and both mercantile and dental worlds have new life infused into them by a return to the old-fashioned GOLD BASIS.

Adjourned until 2½ o'clock.

Afternoon Session.

The subject of Dr. Templeton's essay being open for discussion, Prof. Barker described the different varieties of palatine defects, and his method of taking impressions for the purpose of constructing appliances to remedy these defects; uses a piece of sponge, size of the aperture, fastens a wire for the purpose of holding it, saturates the sponge with batter of plaster, and secures the impression in one piece.

Dr. Luce described a method of using aluminum as a base, securing the teeth to the plate by means of rubber; punches holes underneath the blocks, and countersinks well on the under side; sometimes covers the whole surface of the plate with rubber.

Prof. Barker exhibited an aluminum plate soldered, and described the process of making the same, as follows: strike up the plate, arrange the teeth, and wax up the same as for rubber; insert in flask, separate, remove the plate, and scrape carefully where the solder is to be applied; melt solder on the plate without flux, by holding over an alcohol lamp with pliers, same as tinning iron; plate replaced in lower flask; upper flask containing teeth carefully heated; solder melted and poured around pins, gates having been cut for excess to escape; flask closed and allowed to cool.

Dr. Barker said the process described by Dr. Luce was similar to that of Dr. T. Yardley Brown, of Reading, with the exception that Dr. Brown used a fusible metal instead of rubber. Either process he thought objectionable, on account of the secretions getting between the plate and rubber, or plate and fusible metal.

The secretary read a letter from Dr. B. T. Whitney, president of the New York State Dental Society, asking for the assistance of this body, in their efforts to elevate the profession by establishing a degree. Ordered to be placed on file, and to be answered by the corresponding secretary. A letter was also read from Prof. J. H. McQuillen, regretting his inability to be present.

Dr. Geo. B. McDonneld read the following essay:

THE DENTAL PULP.

ITS TREATMENT WHEN EXPOSED, AND THE BEST MEANS OF PREVENTING EXPOSURE.

The subject of my present remarks, preparatory to its more general discussion by the members of this society, relates to exposed pulps, the causes of, and the best means of preventing exposure. Who has not had a pulp exposed, and if so, suffered one of the most excruciating pains that mortals can endure and live? I speak from actual experience in this matter, having had an excavator break through to the pulp in a tooth. Well, I lived through it, and am here to tell the story, but I don't want to try the experiment again, and will do everything in my power to avoid so great a calamity by strict cleanliness of mouth, having my teeth often examined, cavities filled as soon as discovered, in the best manner and with the best materials. In a review of my practice for the last seventeen years, I can well remember the anxious patients, with faces upturned to mine, asking the question, "Is the nerve exposed?" and then the look of terror when informed that such was the case, for they knew full well what must follow the exposure of a pulp, either extirpation of it, or extraction of the tooth. In view of these painful considerations, I think I shall be sustained by the profession generally in the assertion that, directly and indirectly, exposed pulps have caused us more trouble, and our patients more pain, than all the other diseases of the teeth combined. The immediate causes of exposed pulps are, decay, fracture and wearing away of the teeth. The more remote causes are, imperfectly developed teeth, the results of imperfect constitutions, made so not unfrequently by the indulgence in improper food, and excesses incidental to civilized life. We might as well expect to dip pure water from a stagnant pool as to have perfect teeth developed from imperfect and diseased constitutions. Like produces like the world over, and the great fundamental preventative for exposed pulps is to live and regulate our diet and habits so as to develop the highest type of being. Then, on the principle of like producing like, we shall have a more perfect growth of tooth substance in all its parts, so hard and dense as to defy all attacks from the destructive agents that come in contact with the teeth. When this condition of systemic purity exists, there will be few or no destructive agents in the mouth to

make war on the teeth. The diet should abound with bone-making material. The miller's bolting-cloth robs us of three-fourths of the phosphates in our bread, and we give it to lower animals, thus assisting them to have good teeth, whether we have any or not. Cleanliness should exist in the mouth at all times and under all circumstances; neither tartar nor food undergoing decomposition and generating destructive acids should ever be allowed a lodgment there. If the foregoing preventives were strictly lived up to, we should not have many pulps exposed. Imperfect teeth, soft and chalky, soon give way to the action of the destructive agents found in the mouth. Decomposing acids are at work separating the lime salts from the animal matter, or *vice versa*, and as fast as they are separated they are washed away, until the pulp becomes exposed. When this occurs, from any cause whatever, the treatment instituted should be conservative, looking toward the saving of that organ and the teeth, if possible. I am aware that there is a large class of the profession who advocate and practice the immediate extirpation of the pulp, and filling the cavity in the root, and argue that, after the development and formation of a tooth, the pulp is no longer of any use, and may be dispensed with, at the same time doubting the practicability of saving pulps by capping with oxychloride of zinc. It is claimed by them that the tooth pulp is of such a peculiar nature, and so susceptible of diseased action, that after it has become affected it cannot be restored to a healthy condition. Facts contradict this theory, as the experience of hundreds of the profession will testify, and show conclusively that they are susceptible of treatment and cure the same as other tissues of the body. The success attending the methods of treating exposed pulps, practiced by many of our best dentists for several years, and by myself for the past three years, is a source of more encouragement than a hundred theories. I am happy to say that the old and barbarous practice of extirpating pulps is surely giving way to the more humane and enlightened one of capping with oxychloride of zinc, thereby preserving them alive. When the pulp of a tooth is but recently exposed, the patient in robust health, the blood pure, I believe that nineteen-twentieths of such pulps can be saved by capping with oxychloride and filling with gold. There are three classes of pulps, which can, in my opinion, be treated with a fair prospect of saving them. The first, where there is simple exposure; to this I would

apply a cap of oxychloride. The second, where the pulp is exposed and wounded so as to bleed; I here apply creasote as an astringent, and cap as in the first case. The third is, where the pulp has become congested and has given pain; here we use means to reduce congestion, and then fill as before. In the past two years I have capped over fifty pulps with oxychloride, and know of only six cases where the pulp has died.

Some of the causes of failure in the use of oxychloride are in consequence of diseased conditions of the blood, or the oxychloride was introduced too hard, causing pressure on the pulp, or the cap was made so thin and soft as to break down under the pressure of the gold used in filling, thereby causing pressure on the pulp, and exposing it to thermal changes, thus inducing one of the most prolific causes of inflammation.

There are those in the profession who say they cannot part with old established practices for new and untried theories, and will cite us to failures with oxychloride, and tell us to wait ten or twenty years and then we shall know more about it. That is just what we propose to do, work and wait, and when they discover something better than oxychloride for the protection of the pulps we will try it. When we want to judge of the merits or demerits of a particular mode of practice or treatment we should look at the rule, and not the exceptions to the rule. The dentist who rides his hobby to the exclusion of to him untried practices or remedies, is very apt to get left in the rear rank of the profession. The world moves onward, and so does the science of dentistry. There is no such thing as driving stakes, and saying, "thus far shalt thou go and no further."

We should be eclectic in our practice, trying all things, and holding fast that which is good. What is good practice to-day may be bad practice to-morrow. Compare the practice of twenty years ago with that of the present time, and it amply proves this assertion. The general practice of destroying tooth pulps is one that should be abolished. Some of the objections to it are, first, it is heroic treatment, requiring more nerve than many patients can bring to their assistance. There is also difficulty in removing all of the pulp from teeth having bifurcated roots. There is gradual wasting away of the investing membranes and gums around the teeth, and the loss of that bright, life-like appear-

ance of a living tooth. These are sufficient reasons why a live tooth is better than a dead one.

I find an article in the October number of the *Dental Register*, of 1869, page 443, from the pen of Dr. Taft, who may be considered good authority, so admirably adapted to this subject that I quote it in full. Dr. Taft says:

"The object of the faithful dentist will ever be to enlarge the sphere of his usefulness, and to accomplish this he must bring to his aid whatever of methods and materials may be made available. The use of os artificial as a covering for exposed pulps has been fully described by some who early employed it for this purpose. The method proposed in this description, and since employed by many in the profession, is simply the covering the orifice of pulp exposure by the os artificial, bringing it in contact with the exposed pulp. In many cases the pulp is so susceptible to the action of the zinc chloride as to take on inflammation, become painful and devitalized, following which will be the usual train of circumstances attending such conditions. Such a result may ordinarily be averted by preventing the contact of the escharotic. This may be accomplished by either of two or three simple methods; first, by placing carefully over the orifice of exposure a small, thin piece of Hill's stopping, or even gutta percha softened by heat, so as thoroughly to protect the pulp from the contact of the zinc chloride.

"A more perfect covering, and one that will certainly occupy all space, may be made by a coating of collodion, or a thick solution of gutta percha and chloroform; this is preferable to the former. A thick covering of the solution is placed over and around the orifice of exposure, and the chloroform may be almost instantly evaporated by throwing into the cavity a jet of warm air. If there is an excess of the covering it may be trimmed off. The cavity, after being perfectly dried by the warm air jet, is ready for the os artificial, which should have as great consistence as the proper manipulation will admit. The cavity in all cases may be completely filled, and if a gold filling is to be made, the os artificial should be cut away to the proper point.

"Instead of using the solution for a covering, as suggested, a small pledget of cotton, moistened with carbolic acid, or any other agent indicated, may be placed on the orifice of exposure, and then the cavity filled as before. Another method of protect-

ing the exposed pulp from the action of the zinc chloride is cauterization by nitric acid, after which the os artificial may be directly applied, and will seldom, if ever, cause the slightest pain. Os artificial cannot be relied upon for permanent fillings, except to some extent in certain cases. We regard it, however, as invaluable for the purpose already mentioned. The extent to which the os artificial should be excavated for filling with gold, will be determined by the size and depth of the original cavity. In all cases, however, sufficient excavations should be made to admit of a firmly attached and well adapted filling.

"In a shallow cavity there will be a mere lamina of the primary filling, while in those of greater depth, one-third to two-tbirds of the cavity may be filled with it. Os artificial of the best quality only, such as will become very hard, should be used for this purpose. It then affords an excellent foundation for gold filling. We doubt not, that with proper care, as good gold fillings may be made upon a base of this kind as upon dentine itself, providing, always, that the walls of the cavity are of dentine, and are sufficient to guarantee a good support. The os artificial should, in no case, extend to the orifice of the cavity.

"In teeth, the pulps of which are gone, with a large cavity, pulp chambers and canals of roots, all to be filled, may be treated upon the general plan we have indicated, with an assurance of success equal to any other.

"After the most careful preparation of the whole case in the usual manner, the canals in the roots should be filled with gold, then fill the pulp chamber and decayed cavity with the os artificial, then excavate this to the proper extent and fill with gold.

"There are two or three advantages accruing from this method of operating, especially in extreme cases, that are quite apparent upon the mere statement, and the first is where there are living pulps, the ease and facility thus afforded of introducing gold fillings without a possibility of the slightest injury to the pulp. Another is the entire protection of the pulp from thermal changes, thus placing it in as nearly its original condition as it seems possible.

"Again, in those large and very prolonged operations, as heretofore performed with gold only, involving excessive fatigue to both patient and operator, the work, by the method we have suggested, becomes very much less laborious and fatiguing to all concerned.

"It may be said, this is a matter of no consequence; but it is a matter of very great importance when we consider that some of the very best men in our profession have become broken down and worn out by the excessive labor and fatigue involved in prolonged and tedious operations. Our experience in the methods indicated above runs through about four years, with no other indications than those of the most desirable character."

I will now relate a case of surgery that came under my observation, which is applicable to our profession.

Dr. Frank Hamilton, formerly of Buffalo, and more recently of New York, was, at one time, performing an operation for a friend of mine before a class of medical students; the circumstances connected with the case were these: Mr. Moon, the patient, had applied to an eminent surgeon of Cleveland to have an operation peformed on the os calcis, which had become carious from an injury received from a threshing machine. An examination was made, and the patient was informed that his foot would have to be amputated, as the conditions were such that it could not be saved. The gentleman refused to let him amputate it, but went to Dr. Hamilton, of Buffalo, who, having been informed of the previous decision, made an examination, and as promptly said it could be saved and be as good as ever. On presenting the case to the class, he addressed them in these brief but impressive words: "Gentlemen, any *butcher* can *cut off a leg*, but the true *province* of the surgeon is to save legs." And he did save the limb, and Mr. Moon has it to-day as good as it ever was. Dr. Hamilton's address to his class was short, but contained truths that I wish were indelibly imprinted on the mind of every surgeon and dentist in the world. To save! save! and not destroy the creations of God, is the province of the true dentist, and, until we do this, we shall fall short of performing our whole duty to God and our fellow-men. It made little difference to the first surgeon if Mr. Moon lost his leg, but to him the saving of it was a matter of serious interest. Our relations with our patients are precisely the same. It is of no account to us, personally, if they lose their teeth, for we can, probably, make them false ones—as truly false to every attribute of the natural organs as their name can possibly indicate. But to our patients the matter is different. If we destroy the teeth God has given them, when they could be saved, we have robbed them of organs that we can never replace with rubber and porcelain.

From our experience with os artificial, we have come to the conclusion that ninety pulps out of every hundred, under favorable circumstances, can be saved; and the special duty of the dentist is to save instead of destroying them. Dr. Atkinson, of New York, says that he never purposely destroys a pulp, and that the dentist is weak or wicked who would do so. In the doctor's opinions I fully concur, for I feel that we as a profession, and I as an individual, have too often been weak and wicked enough to destroy, not only pulps, but teeth, and whole sets of teeth, that might have done their owner's mastication well for years.

And now, gentlemen, if we have been sinners in the past, there is more reason that we make amends in the future, by so regulating our practice toward pulps and teeth that they may live and not die. And my desire is, that perfect dental knowledge and the laws of health may become so well understood and practiced, not only by our profession but by the masses of the people, that the time may soon come when tooth extracting shall be practiced no more.

Dr. Robbins opened the discussion by asking for some definite information as to the best material to be used for capping nerves, or whether, and under what circumstances the operation was advisable; whether any benefit could be derived from constitutional remedies.

Dr. Gillespie was eclectic in his practice; sometimes succeeds with one material, sometimes with another, but was willing to be content if he succeeds in the large portion of cases; uses carbolic acid as a preliminary application; prefers oxychloride of zinc for filling; the pain from its application usually subsides in a short time.

Dr. Robbins thinks the pain may be obviated by using a weaker solution of the chloride.

Dr. Barker believes in using carbolic acid and a strong solution of the chloride.

Dr. James S. King has had considerable success in the treatment of exposed pulps, thinks a great deal depends upon the proper manipulation of the paste; does not use carbolic acid; prefers pure creosote; thinks 95 per cent. of exposed pulps can be saved; does not always fill immediately; sometimes treats for some time

with creosote; thinks in the worst cases there is a chance of success, and considers it our duty to use the chance; thinks gutta percha not so good as oxychloride.

Dr. Barker thinks it impossible to obtain *pure* creosote.

Dr. Neidich thinks success almost certain in good subjects and recent exposure; thinks pressure, or the forcing of foreign substances through the aperture is the cause of most failures; considers gutta percha quite as good as oxychloride of zinc, perhaps a little more difficult to apply without pressure, but not so much pain in the application; does not think there is any difference in the action of creosote and carbolic acid; believes that pulps have sufficient recuperative powers to close the opening if protected from thermal changes and external irritants; has seen such cases closed by secondary dentine, or calcification of the pulp, without the aid of art; does not believe a diseased pulp can ever be restored to health; in such cases always extirpates.

A public address was delivered on Wednesday evening, at 8 o'clock, by Dr. Samuel Welchens, on

ASSOCIATION AS AN ELEMENT OF IMPROVEMENT.

In no age of the world has there been so much attention paid to the formation of associations for mutual benefit and improvement as the present.

The history of earlier times is so blurred and blotted with deeds which emanated from the iron rule of despotism, that men instinctively preferred habits of seclusion and selfishness, as a protection from the persecutions and inhumanities of their rulers, than to seek the benefits of society, where jealousy and suspicion were the ruling elements which would often turn the social attributes of the home circle into a passport to the block, or the torture-rack of the inquisition.

The tyranny of public sentiment, the dark, designing prerogatives of government, and the superstitions and infatuations of the church, have emulated each other in deeds of cruelty and oppression to such a degree as to have rendered the individual bold indeed, so far to have disregarded the tendencies of either as to contemplate a movement toward fraternal intercourse within their respective borders.

Modern customs, however, and the gracious principles of civil

liberty so extensively pervading every land and form of government at the present day, intuitively awakens a desire for social intercourse in the human breast, and there is no better settled principle in history than the quickening beneficial and moral influence exerted by such progressive energy.

Associations, when characterized by unity and harmony, and founded upon the eternal principles of truth and morality, have ever proved a most formidable bulwark to civil religious liberty, and that expansive development of and intellectual improvement, which has raised the world from heathenish darkness into the broad, open sunlight of progressive civilization and scientific advancement.

Social action consolidates, establishes, renovates, shapes and sustains every business enterprise, pursuit or profession, and every scheme of a moral or religious character that seeks its stimulating power.

With it, the race of mankind is at once raised to dignity and prosperity; without it, selfishness, discord and anarchy rend asunder the proud fabric of human enterprise, and as the planets of the solar system, deprived of the forces which keep them in their respective orbits, would break away into wandering meteors, so would the social system crumble into withering fragments, and fly off into isolated selfish particles, as scintillations are emitted from the consuming metal. It is to the intellectual world what the law of gravitation is to the physical, and no other instrumentality can so develop the finer and higher qualities of the mind, as the comparison and interchanging of views and ideas. "As steel sharpeneth steel, so the countenance of man sharpeneth that of his brother."

If we analyze the fertilizing influence of the spirit of those associations, and contrast its virtues with the sordid elements of abstract individualism, we will see at once how la.gely it enters into all the relations of life, and how happily its results compare with the repellent characteristics of selfishness.

In a scientific point of view this law of dependency or association is of paramount significance. Chemistry, electricity, the laws of gravitation and cohesion, the conditions of growth in vegetation, and all the laws of affinity, by which separate and distinct elements are brought together to form systems and construct fabrics, rest essentially upon it.

A chemical compound, for instance, is composed of two or more elements, and as such it is capable of acting in *itself* as an element in many of its combinations. But without the association of those elements there could be no chemical change or equivalents, and the science would fall as a dead letter by reason of its incompetency.

A germ contains all the principles necessary to develop the towering oak; but this principle of dependency upon correlative agencies, calls into action moisture, heat, light and the gases of the atmosphere as essential conditions of vegetation, without which there could be no growth, and the germ would remain forever but a particle of inert and worthless matter.

The solar system is composed of myriads of worlds and planets, with no special sympathy or affinity with each other, and if destitute of correlative forces, or if influenced solely by abstract repellent isolations, they would wander in the immensity of space, and destroy each other by forcible contact, or terrible explosions, occasioned by the approximation of volatile and heterogeneous gases. But by the *association* of the law of gravitation, with the elementary and chemical equivalents of the atmosphere, and the centripetal and centrifugal forces, each planet is held in its respective orbit, systems revolve around systems in perfect harmony, and this order of the universe becomes another important witness to the efficacy of association in every department of nature.

No structure, whether organic or artistic, can attain to any degree of usefulness or perfection without it; and all through the labyrinths of professional science and historical research, in government, in moral and physical culture, or even the minor details of life, no great or brilliant results have ever been achieved where the power and efficacy of *association* have been ignored.

Even the language, habits and movements of individuals are influenced by it, and are fraught with happy, graceful results, or awkward, halting, slothful characteristics, just in proportion to their facilities for associated intercourse with kindred spirits.

Education is but a systematizing of the faculties and powers of the mind, so as to enable it the more readily to grasp and analyze the great problems of life as they present themselves in varied forms before us. But no system of education could ever prove to be successful in the accomplishment of such ends if it were

founded upon abstruse and isolated abstractions. The finer and purer and more useful triumphs of science are the true component elements of education. But they are strengthened and sharpened and established alone through the stimulating energies of *association.*

ASSOCIATION IN THE LEARNED PROFESSIONS.

My object is to apply this philosophy to the formation and workings of association, in the development of the learned professions, and more especially to that of *dentistry.*

In all the essential requisitions of improvement in any profession, these *societies* have a leading and powerful influence. It is not only in scientific culture that improvement is felt, but the *social* benefits are of incalculable value.

If the interest and dignity of a profession are to be advanced, and its standard of excellence elevated, it is most important that a laudable emulation be encouraged among its members to incite them to earnest inquiry and a progressive individual energy. *These* are the elements of improvement and success, but they have no fellowship—no growing affinity with the characteristic attributes of a mean *prejudice.*

If they are to have a free untrammeled exercise of their powers, the corrupting influence of a *jealous nature* dare not contaminate the soil designed for their propagation. But a cordial cultivation of the higher powers of the mind, and the nobler impulses of the heart, through an intimate acquaintance and friendship of the members of our craft, one with another, as is the result of those societies, is the surest method of propitiating those baser and sinister tendencies, and of opening the way to dignity and manhood.

The first step toward such a movement—the mere desire to unite in such an enterprise—is of itself the exercise of an energy in the direction of that noble endowment of the heart, which does not only make us better members of our *profession,* but better citizens and more useful members of society.

Those petty jealousies and disreputable business prejudices which enter so largely into every community, and become so baneful in almost every business enterprise, are nowhere so reprehensible as among members of the same profession, especially those who hold positions of respectability.

They retard the progress of intellectual and scientific improvement, and destroy every incentive to research and discovery, thus losing to their profession the acumen of their minds and experience, which, if under better discipline and a more hopeful influence, might add honor to themselves, and useful and brilliant acquisitions to their vocation. To nurse and indulge such a spirit is the most certain way to destroy a man's influence for good; for it renders him morose, sullen, designing and selfish, with no good word for any one and no praise, save for himself.

Instead of those higher qualities of his being, of which we have just been speaking, sordid avarice takes possession of his life, and improvement, that should flow from his participation in any scheme or compact of social intercourse with his neighbor, is nowhere to be found.

Such men are sometimes found in the liberal professions; but they are rarely seen in associations formed for the advancement and improvement of such profession. If they come in at all it is to obtain position, or to have some honor thrust upon them, which they had not genius or energy to call forth themselves. Disappoint them in this, or fail to make leaders of them, and they again retire into their wanton, *slothful* and *selfish habits*.

Contrast the life of such a narrow-minded, hide-bound individual, with the full, free, open expanse of a being whose life and habits have been trained in the school of fraternal intercourse. One who enters a profession to reflect honor and credit upon it, and who comes into every measure designed to prove his love for his calling, and a mutual benefit to both, and the advantages of those associations stand out in bold relief.

He is thus qualified to meet his patrons, not only in the routine of scientific competency, but as a *conscious gentleman*, *easy* and *affable* in his manner, *sympathetic* and *tender* in his *bearing*, with more of a desire to do them good than to get their money, and he will meet both the requirements of his profession and the wants of the public in such a manner as to insure him a useful and brilliant career.

THE SCIENTIFIC BENEFITS OF ASSOCIATIONS.

We will now turn to a contemplation of the real substantial benefits of those societies in a scientific point of view.

Professions are not made, they grow. They are either adventi-

tious buds from some parent stem or trunk, or they are regular growths from germs lodged in the rich prolific soil of science.

They are thus creatures of circumstances and conditions, and require nutrition of a substantial character to secure their development, just as much as the growth of a vital organism would. A profession cannot live upon abstract theories and isolated dogmas. There must be an orderly and progressive exercise of the elements of growth and improvement, in order to establish an energetic and *hopeful status.*

Dentistry, though a branch of the healing art, is nevertheless, a profession of legitimate birth. It was practiced as a distinct branch of surgery by the *Egyptians* as far back as 1200 years before the *Christian era,* and the complications of the teeth with the adjacent parts—their important position and the character of their function as organs of the highest type of structure, gave it as a separate branch of surgery the very highest position in the role of professions as then practiced.

Like other objects of growth, *dentistry* may be said to have three several stages of development. The first we will designate as that of *infancy.* The second of *youth or pupilage;* and the third (though in a comparative sense), that of *maturity.*

We characterize the remote history of our profession as an infantile stage, because, in being confronted with the stern realities of diseased and aching teeth, the ancients, in their remedies for those "distempers," as they styled them, exercised far more superstitious quackery, which seemed to be the result of ignorance and inexperience, than scientific, or even common judgment, in which an advanced stage of development might be evinced.

The malady then, as now, was, no doubt, as *excrutiatingly mature;* but the remedy, either as medical or surgical, was of that order as to stamp it with the imbecility of infancy.

Genius and correct *scientific theories* were not wanting in those days; but the prevailing superstitions led to the most ridiculous expedients, and true skill and science (which are always modest) were kept, to some extent, at least, in the background.

There were then, as now, two elements striving for the mastery. The one was the honest promptings of the true devotee of *science;* while the other reveled in an atmosphere of quackery, and taking hold of the crude ideas of the people, *the latter* has always been the most successful.

The faint glimmering of science in those days, said: "I know well that many believe that there is no better remedy for toothache than extraction; but before proceeding to that there are many other remedies that may be successfully employed. It is not necessary to proceed at once to extraction, even though caries exist, for, by removing the decayed portion of the tooth with a sharp cutting instrument, such removal causing no pain, whatever remains is as sound as a perfect or healthy tooth."

Quackery was equally solicitous about retaining the tooth, probably on account of their inability to extract them, but less scrupulous in its restoration to health.

Accordingly, there were amulets and other superstitious means employed to allay the pain; and not unfrequently such ridiculous notions as the following would be entertained and resorted to as expedients, for the want of better theories by which to humbug the people. "The tooth will drop out by itself if it be rubbed with *African sponge*, but care must be taken not to meddle with a tooth which is healthy.

The aversion to the extraction of the teeth gave rise to many curious expedients to get round a most difficult and dangerous task, and accordingly they resorted to the actual cautery, in the use of hot iron and brass needles, and hot oil and butter to destroy the pulps of painful teeth, and "numerous caustic medicines, the intended effect of which was to make the teeth exfoliate," and thus they would destroy them rather than extract them.

Teeth were filled, too, with lead in those days, but the object seemed more for the purpose of strengthening them for the operation of extraction than to preserve them from further decay. For stopping them when carious, a sort of gum was used, or the decayed part was scooped out with a common scalpel. This sort of treatment was in vogue in the days of *Celsus*, who flourished about the commencement of the *Christian era*.

This slow progress in the healing art, from the time of *Æsculapius* to the days of *Celsus*, a space of about 1200 years, shows the scientific animus of those earlier years, and is a fitting commentary upon the *virtue* and *power* of *colleges* and *professional societies* to carry forward and upward that matchless development which has characterized the present age and the *latter-day glory of the scientific world*.

At a still later date we have accounts of artificial teeth being

set on wire, and carved out of ivory, but to what extent this practice was carried we are not informed.

The history of those ages is but a catalogue of this kind of practice, more or less ridiculous, and alternating between the devotees of science, even in its incipiency, and the crude notions of the ignorant and superstitious mountebanks, who seemed to be about as plentiful *then* as *now*.

This, then, faintly shadowed forth, is a glance at the infantile stage of our profession, and may be regarded as reaching, in this fashion, down to the beginning of the last century.

"In the year 1700 persons destined for the profession of dentistry were compelled, in France, to undergo a regular examination. It is from this period, perhaps, that we must date the establishment, in modern times, of the dental art, as a *distinct branch* of medical practice;" and from this time forth its pupilage may be regarded as in vigorous and successful operation.

We have neither time nor space to dwell upon this part of our subject. It is not important that we should, but the superstitions of the ancients, and this narrow, time-serving jealousy, of which we have already spoken, seems to have been inborn elements with those who presumed to practice in a profession which has always been too lenient and too easy of access. *Accordingly*, it is not beyond the recollection of some of our oldest practitioners, when this spirit still reigned supreme, and for a man of ordinary intelligence and genteel address to enter a dental office, would usually produce considerable commotion. There would be as much nervous perturbation and smiting together of the knees upon the part of the operator as that of the patient.

The latter would quake and tremble for fear of the jaw-breaking operation of extracting a tooth; whilst the former would tremble and quake, lest the latter would *steal the business*.

There was thus any amount of jerking, dodging and rapid nervous concealment of instruments and appliances, lest quacks should spring up, and, by their bungling work, cheat the people out of *money and teeth both*.

If one of those characters chanced to discover a *new thing*, whether forceps or file, or excavator, hand-mirror, chair, or even *tooth powder*, he would straightway get a *patent* for it, and *woe* to the *infringer thereof*. The indignities and anathemas of the whole civil code would descend upon his devoted head, with a certainty

and severity which would put to blush the *prettiest efforts of old Josiah.*

They also exercised a commendable *solicitude*, not only for the *protection* of their *patients* against bad work, but against exorbitant charges also; and lest the *dear people* would, in some way, be *cheated*, they would *insure their work*, or *give it out on trial*, and emulate each other in establishing *starvation prices.* Some of these habits, I am sorry to say, have followed the profession even into maturity.

As the youth grows and his mind expands, so the *profession has grown*, despite the efforts of some of its slothful and unprincipled members to drag it to the earth, in endeavoring to make it subservient to their own *aggrandizement.*

Its final stage of development, however, may be gathered up in the present advanced condition of these two ideas, namely: The course of study necessary to a complete dental education, as demanded by the scientific spirit of the present age. The second is that high-toned *social code* which is more directly developed by those *associations.*

These combinations draw in every element of improvement. Instruction in the private office should be directed with a view to a thorough and complete collegiate course; and the instruction there should again be followed and established by the discussion of social and scientific benefits of our *local, State* and *national societies.*

There are here facilities for every species of instruction and information, and he must be a *drone indeed* who does not grasp the helping hand which is thus stretched out to render such important service upon such *easy terms.*

Another most important element in this process of improvement is a substantial and efficient *literature.* Where a disposition to improve in a literary culture is wanting, a high-toned standard of excellence cannot be attained. No practitioner, however well his mechanical manipulations may be performed, should be recognized as such, unless careful attention be paid to such study and research as will keep him up with the progressive spirit of his profession. If he stops reading, or *ceases* to be a student, *then should he also stop practicing.*

This is the life *and light* of the scientific element in any profession, and for a drone to steal in and bring disgrace upon his calling

by a criminal imbecility, as the result of an ignorance superinduced by indolent habits, is an outrage, not only upon the profession, but the community at large; and malpractice, arising from such pretensions, should be subject to *severe legal prosecution.*

The idea, then, of a *mature profession* is not to *cut off* all the resources of development and progression, but so to *arrange* and *harmonize* them as to make them more *efficient.*

It is so to use and handle the appliances to which I have adverted (and the most potential of which I contend to be those societies), as to fortify all the weak points and outposts of our profession, that it may prove to be our *castle,* finished and complete, towering above and beyond the *prejudices* and *jealousies* of the world of selfish business interests, and the floundering blunders of *professional charlatans.*

THE PENNSYLVANIA STATE DENTAL SOCIETY

was organized under most favorable auspices, in the city of Philadelphia, in the early part of December, 1868; this being its second annual meeting.

The formation of this association should be regarded as complimentary both to the profession at large and the people of this great Commonwealth.

It is certainly a source of commendation and congratulation to every man who loves his profession to know that it contains vitality enough to develop such promising evidences of prosperity.

The movement was not set on foot for selfish purposes or individual preferment. There were no dreams of future greatness being *thrust* upon any one who was not perfectly competent to bear such distinction, or willing to receive it.

The idea that it was to be formed in the interest of one local society in preference to another, or to the advancement of the reputation of one of its members over the worthy claims and aspirations of another, did not enter the mind of any of its founders. It was not intended that Pittsburg should be preferred to Philadelphia, or that Erie should claim more prominence than Lancaster, or that Harrisburg or Reading should present better or stronger claims than Williamsport or Chambersburg in the dispensation of its benefits. The material of which it was composed, and the spirit by which it was animated, were a little too independent to be *ruled* by one section of the *State,* or *ruined* by *another.* It is thus

composed of that kind of material that rarely succumbs to ordinary trials, and *never cowers* at the *frowns* or *ridicules* of self-constituted dignitaries.

We say its organization was not prompted by any such sinister motives. It was not forced into existence by a few narrow-minded individuals, whose *aims* and *ends* were to establish a *central oligarchy*, whereby the sovereign character of our profession should be destroyed, or any local society or individual interest be subservient to a *focalization of power*.

But it *was* the result of an *open, generous outburst* of the progressive energies of a profession which was *big* with the spirit and enterprise of the age; and the vitality which it has displayed, from the beginning, is the very best evidence that it was *born to live*.

The positive attributes of this *State Society* are, that it was formed for the sciencific and social advancement and benefit of every member of the dental profession throughout this *broad Commonwealth*. It was intended to draw together the best material and the best energies of the profession, thereby to constitute a *nucleus* to which other good material would gravitate, and thus establish a status, not only upon a higher scientific *basis*, but upon surer and better moral and social principle than obtained heretofore.

It was thought that such efforts would be appreciated by those high up in the scale of honor and learning, and be commended and sought after by those who are striving for reputation and advancement in their professional pursuits.

The proposition being fair and honest, and honorable and beneficial to all, no one dreamed of a formidable opposition or of serious objection, especially among those who were well informed in regard to those redeeming qualities. This social and scientific compact was entered into by the best talent and some of the best men to be found in the State. With such antecedents, and the endowment of such energy as might reasonably be presumed to be thrown into the enterprise, we expect not only that the State Dental Society will prove to be a *success*, but that it will be a triumphant vindication of all that we have said about the benefits of such *societies*.

But the *people* have an interest in this matter. If we confine all the benefits of those associations to the members of our *profession*, we would defeat the main object of our argument. The

improvement thus developed *concentrates* the energies of the profession, but it is to render more efficient service to those who require it. If a man embarks in a vocation which so nearly concerns the health and comfort of the people of his community, it is not only his duty to avail himself of every source of information, and every appliance necessary to carry out successfully the pretensions of his craft, but it is the moral duty of the individual members of that community to not only countenance and encourage such schemes of improvement, *but they should demand* either the preparation and competency which he may obtain from every approved source of information, or his *retirement* from *practice.*

Now, my friends, if there is any one thing more despicable than another upon this broad earth, it is a *quack community;* quack *dentists,* quack *doctors,* quack *lawyers,* quack *teachers,* quack *statesmen* are plentiful enough everywhere, and *bad enough* in all conscience; *but a quack community* outstrips them all. I do not mean a community of quacks; such a thing is scarcely possible, since they are unable to live upon each other; *but a quack community,* a community of average intelligence and ordinary business qualification, that will submit to the jaw-breaking operations of an *ignorant* and *bungling dentist;* the life-endangering practice of an *incompetent* and *self-conceited physician;* the ridiculous council of a *poor half-bred lawyer;* the feeble efforts of an *empty-pated teacher,* and the *dark designing chicanery* of a *mountebank statesman,* day after day, and year after year, with no effort to throw off the *incubus.* This is what we conceive to be a *quack community.*

Why a system of fraud and quackery should be supported by any class of people is a question entirely beyond our comprehension. How it is that the natural bias of the public mind seems to gravitate to deception and humbuggery, rather than a proper appreciation of the scientific, the noble and the good, we cannot explain. Certain it is that there *are* antagonisms, and to reconcile them, especially in dentistry, is the object of the formation of our societies.

All that is necessary, to be guided properly, is, to seek information from reliable sources, what your doctor's *standing is in his profession.* A dentist or a physician may deceive the people, but he rarely humbugs the solid mind of his *profession* long. Nor is his diploma a sure test of his competency. Those who are graduates of colleges are not at all times our best operators. This, of

course, is a leading qualification, but some of the greatest *charlatans* in the profession hold diplomas, and though good as a general rule, those diplomas are dangerous things in the hands of men who will *abuse* the license they bestow upon them.

It is not there *alone* that the profession looks in making up the estimate of a man's qualification to practice. It is his *faculty*, his *judgment* and his *genius*, and the moral bearing and attributes of character, *after* the advantages of a liberal professional education, which make up the totality of his *passport* to the higher and better judgment of his professional brethren; and *just here* he generally must come to become a member of those societies.

An out-and-out quack scarcely ever gets into our societies, and consequently a membership therein should be one of the *very best passports* to your *confidence and support.*

In the next place, note his standing in society. He may be a little *gassy* and *conceited* (some of our best men are so), but he must be *sober* and *solid.* The *brain* must be clear and the *hand* steady that wields an instrument or that compounds a prescription; or the individual that would presume to render you medical or surgical aid when in distress should be entirely *unworthy your confidence.*

Now, why should there *not* be a grand simultaneous movement of the dental profession throughout this *State*, and, indeed, throughout the country, toward a higher, more concentrated and more efficient standard of usefulness? Similar efforts are being made in every other department and enterprise in life; and that branch of the *arts* and of *science* that loiters, or shows itself to be a *laggard*, is unworthy of the age, *and ought to go down!*

Some years ago, at a literary entertainment, a distinguished scholar characterized Pennsylvania as a *sleeping giant.* He had reference, principally *and especially*, to the cause of education. But in this, as well as in every other particular, it was a happy *simile.*

If we contemplate, for a moment, the various interests and the latent energies of this vast commonwealth, the force and power of the comparison will at once be apparent.

It is not only the mental powers in the educational intersts of this *huge giant* which are dispelling the mists and drowsy scales from eyes and activities long *closed in slumber*, but its matchless resources in its *mineral, agricultural* and *commercial* features are

being not only aroused, but developed into physical proportions, not only as a structure for its mental endowment, or as a peer among *other States*, but a *veritable giant*, towering head and shoulders *above them all.*

Anatomically considered, the caricature is still more striking. Its mineral bones, its iron muscles and nerves of steel, and an epidermis of the verdure and rich soil of the earth, and wells of oil belching forth from its very bowels, attest the vigor of its heart of enterprise. Then see the rippling grandeur of its circulating system, in its majestic rivers, its numerous creeks and rills, and meandering streamlets, and the herculean labor of its hand in its railroads and canals and engines of locomotion and power. All these present a physiological fabric well calculated to receive and develop the higher attributes of education, and a cultivation of the arts and sciences.

It is being beautified, too, is this sleeping giant, in its splendid cities, beautiful towns and hamlets, and gorgeous palaces, and the living green and foliage that covers its broad acres and towering hill tops; and the moving mass of living, working, jostling beings that swarm every foot of its soil, is indubitable evidence of its being a *thing of life.*

To show the high character and nature of this giant organization; it is not like the brute, either *graniverous* or *carniverous*, but, like man, it is *both;* for in its repast it does not stop with the immense loads of its vegetable and agricultural products, but the "cattle on a thousand hills" are daily victims to its insatiable appetite.

Now, if there are societies, corporations and promiscuous gatherings in the interest of every other enterprise that caters to the taste, appetite and development of this giant, why should not dentistry take position side by side with the best of them? If, by the concentration of those interests, every part and feature is improved and sharpened, *why not sharpen the teeth also?*

If this idea is correct, and *that giant* is properly aroused, with an appetite sharpened by the slumber of a century, and you furnish his repast as above indicated, you will call down the anathemas of his vengeance if you do not furnish him with a good *healthy and efficient set of grinders.*

THURSDAY MORNING.

Minutes of yesterday read, corrected and adopted.

This morning being set apart for clinical operations, and the presentation of cases, instruments, mechanical appliances, &c., Professor Barker described a case upon which he proposed operating, viz.: The filling of a compound cavity in a right superior second molar, anterior and grinding surfaces, extending somewhat beneath the gum; pulp covered by secondary dentine. Dr. Barker operated under difficulties, not being accustomed to the chair, instruments, foil, &c. The foil was manufactured by Mr. Dunlevy, gold beater, and kindly furnished to the society free of charge. Dr. Barker commenced his operation on three retaining points at the cervical wall, this part being protected by wedges; used No. 8 gold foil for the anchorage and floor of cavity, then successively Nos. 20, 60 and 120; used a tin mallet, weighing 1½ ounces.

A case of necrosis of the inferior maxillary bone was presented to the society. A gentleman, æt. 55, strumous diathesis, greatly emaciated from the excessive discharge of pus, great anxiety of countenance. Patient had been operated upon several times, but the operation failed for want of the complete removal of the dead bone. The treatment recommended by Prof. Barker, whose judgment was asked by the society, was good, nourishing food, cheerful company to relieve the mental anxiety, tonics, plenty of fresh air, and the complete removal of sequestrum, preserving, if possible, a border of the maxilla and the periosteum.

A case of a young lady afflicted with an osseous or cartilaginous tumor of the inferior maxilla was also presented. Patient of good health, æt. 17, sanguino-bilious temperament; tumor caused by the unskillful extraction of a molar tooth, evidently accompanied by an abscess from a remaining root; gum of a purple aspect; fistulous opening. The treatment proposed was the removal of the root, and the application of a strong ethereal solution of iodine to the maxilla, both externally and internally.

The treasurer reported a balance of $37.26 remaining in his hands, after paying all orders drawn upon him. Examined by the executive committee, and found correct. Accepted by the society.

Afternoon Session.

The special order of business being the election of officers to serve for the ensuing year, the society elected by ballot the following officers, viz.:

President.—Dr. John McCalla, Lancaster, Pa.

1st Vice President.—Dr. J. G. Templeton, Newcastle, Pa.

2d Vice President.—Dr. M. E. Gillespie, Pittsburg, Pa.

Recording Secretary.—Dr. C. H. Bagley, Meadville, Pa.

Assistant Recording Secretary.—Dr. C. B. Ansart, Oil City, Pa.

Corresponding Secretary.—Dr. Samuel Welchens, Lancaster, Pa.

Treasurer.—Prof. G. T. Barker, Philadelphia, Pa.

Board of Censors.—Dr. A. B. Robbins, Meadville, Pa.; Dr. W. E. Magill, Erie, Pa.; Dr. J. D. White, Alleghany, Pa.; Dr. Geo. W. Neidich, Carlisle, Pa.; Dr. Geo. J. Luce, Titusville, Pa.

The President appointed, with the approval of the society, the following committees, viz.:

Executive Committee.—Drs. A. B. Robbins, Geo. W. Neidich, William Nichols Amer, J. Z. Hoffer, G. T. Barker.

Publication Committee.—Profs. G. T. Barker, J. H. McQuillen, T. L. Buckingham, Drs. J. S. King, C. H. Bagley, Samuel Welchens, W. N. Amer.

The president and secretary were authorized to issue credentials to any six members who wish to attend as delegates to the American Dental Association. Dr. W. E. Magill, was appointed a delegate to the New York State Dental Society, and Dr. J. S. Smith, a delegate to the Ohio State Dental Society.

The following members were appointed as essayists for the next meeting, viz.: Prof. G. T. Barker, Drs. Samuel Welchens, George W. Neidich, and George J. Luce, and were requested to announce the subjects of their essays, as soon as possible, to the corresponding secretary.

The following resolution was offered to the society:

"Whereas, the editor of the *Dental Times* generously offers to publish the papers and proceedings of this society, and furnish a copy to each member free, therefore

"*Resolved*, That a copy of our papers and proceedings be furnished the *Dental Times* by the publication committee."

Dr. McCalla, moved to amend the resolution, by substituting "dental journals," for "*Dental Times*"

Amendment lost, and resolution adopted.

Adjourned, to meet at Gettysburg, on the second Tuesday in June, 1871. Session to continue three days.

THIRD ANNUAL MEETING

OF THE

PENNSYLVANIA STATE DENTAL SOCIETY.

The third annual meeting of this body was held at the Springs Hotel, Gettysburg, commencing June 13, 1871. The president, Dr. John McCalla, of Lancaster, in the chair.

Members present: Drs. W. N. Amer, C. B. Ansart, H. W. Arthur, C. H. Bayley, G. T. Barker, C. D. Elliott, M. E. Gillespie, A. F. Herr, J. Z. Hoffer, J. W. Heistand, John McCalla, J. G. Moore, G. B. McDonneld, E. M. Pierce, A. B. Robbins, J. S. Smith, W. H. Scholl, J. G. Templeton, Samuel Welchens, M. H. Webb and J. D. White.

A majority of the board of censors being absent, the chair appointed the following members as substitutes: Drs. W. Nichols Amer, W. H. Scholl, M. H. Webb. In accordance with the report of the censors, the following new delegates were admitted to membership:

From the Harris Dental Association.—Drs. E. K. Young, J. A. Martin, F. Hickman and J. L. Hill.

Lake Erie Dental Association.—Drs. J. B. Humes, W. H. Martin and F. Herrick.

Pittsburg Dental Association.—Drs. H. J. Chandler and J. O. Flower.

Lebanon Valley Dental Association.—Dr. S. H. Guilford.

Cumberland Valley Dental Association.—Dr. D. S. McCoy.

Odortographic Society.—Dr. Chas. J. Essig.

Pennsylvania Association of Dental Surgeons.—Dr. Robt. Huey.

Susquehanna Dental Association.—Dr. J. A. Barrett.

The minutes of the last meeting of the society were read by the secretary, and approved.

Dr. Robbins, of the executive committee, reported having secured the Springs Hotel, with its large hall, for the meeting of the society, and recommend the session to be from 8 A. M. to 12 M., and from 2 to 5 P. M. Report accepted.

Dr. Welchens, of the publication committee, reported that all the matter that had been placed in their hands had been examined and published as ordered by the society. Report accepted.

The following amendment to the constitution proposed by Dr. Robbins, and laid over from the last meeting, was then taken up:

A new article. "Any member of State Dental Society in good standing may, upon passing a satisfactory examination by the censors, with the approval of the society, receive a certificate constituting him a *Fellow of the Pennsylvania, State Dental Society*, under seal, signed by the censors, president and secretary."

On motion of Dr. Welchens, the discussion of this subject was postponed until evening, that it might be taken up in connection with the report of the committee on legislative action.

The board of censors reported that the constitution and by-laws of the Pennsylvania Association of Dental Surgeons, has been examined by them, and found to be in harmony with the requirements of the constitution of this society.

Dr. Robbins announced the death of Dr. Snow, of Buffalo, an old member of the Lake Erie Association.

Adjourned until 2'o'clock P. M.

TUESDAY AFTERNOON.

The society resolved itself into a committee of the whole upon the part of the Union, and visited the battle-field of Gettysburg.

TUESDAY EVENING.

President McCalla in the chair.

The proposed law regulating the practice of dentistry in the State of Pennsylvania was taken up.

Dr. McCalla, on the part of the committee having the matter in hand, read a copy of the proposed law, as follows:

An Act to Improve and Regulate the Practice of Dentists in the State of Pennsylvania.

SECTION 1. Be it enacted by the Senate and House of Representatives of the State of Pennsylvania in general assembly met: That it shall be unlawful for any person to practice dentistry in the State of Pennsylvania for compensation, unless such person has received a diploma from a respectable dental college duly incorporated under the laws of this or some other State of the United States, or foreign country, or has obtained a certificate of qualification issued by the State Dental Society as hereafter provided; or has been in reputable dental practice for ten or more consecutive years in this State: *Provided,* That nothing in this section shall apply to persons now engaged in the practice of dentistry in this State before the 1st day of January, A. D. 1874.

SEC. 2. It shall be the duty of the State Dental Society at its first annual meeting after the passage of this act, and annually thereafter, to elect five qualified members of said State Dental Society to act as a board of examiners, whose duty it shall be to meet at least once a year to examine all applicants, and upon a satisfactory examination, issue a certificate of qualification to practice dental surgery.

SEC. 3. To provide a fund to carry out the provisions of Section 2, the board of examiners shall collect from all who receive certificates to practice dental surgery, the sum authorized by the State Dental Society, not exceeding thirty dollars ($30) each, and account to said society for the same.

SEC. 4. Any person who shall practice dentistry without having complied with the requirements of this act, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined not less than fifty ($50) nor more than two hundred ($200) dollars.

SEC. 5. All prosecutions under this act shall be by indictment before the court of quarter sessions having jurisdiction in the county where the offense was committed; and all fines collected under the provisions of this act shall be paid into the treasury of the school fund in the district where the offense was committed, for library purposes.

Dr. Robbins explained that the ten-year section was inserted because the opposition to the bill first came principally from ten-year men. The bill was referred to the judiciary committee, where it remains, as the chairman would only report it negatively. Would rather have it remain there than to have it so reported.

Dr. McCalla thought the prospect better for its passage next winter.

Dr. Barker expressed his satisfaction with the report of the committee, and the interest excited in favor of the bill throughout the Commonwealth, and prefers securing its passage on its own merits.

Dr. Robbins said the agitation had raised the standard of denistry in the State almost as much as if the law had passed, for dentists feel that it is coming and are preparing for it.

Dr. Templeton thought at least one dentist from each county in the State should visit Harrisburg and use his influence in favor of the bill.

Dr. Scholl said that the letter which Senator Davis received in opposition, was from Dr. Brenizer, but that was in opposition to the first bill, and he as chairman of the committee to which the bill was referred, reported unfavorably, in this latter case, thinking it to be same.

Dr. McCalla thought that if this would be explained to Mr. Davis, his opposition to the bill would be withdrawn.

Dr. Webb thought the opposition of many to the bill is based upon the provisions of that first presented, they not having had an opportunity to examine the last one presented. He favored a bill that will require all entering the practice, after a given time, to be graduates of a reputable college, and thinks such a one would not meet with opposition.

Dr. Moore thought the greatest opposition to the present bill is called forth from its retrospective character.

Dr. McDonneld thought the most of the opposition comes from mechanical dentists. The bill should be made to apply to dental surgeons only.

On motion of Dr. Templeton, the committee on bill be continued, and reimbursement expenses already incurred be authorized.

On motion, the committee on bill was instructed to procure an amendment to the act of incorporation, changing the name

of the society to that of Pennsylvania State Dental Society, because the societies of other States have the name of the State first.

Anticipating the above motion, Dr. McCalla reported the committee on seal had therefore taken no action.

The committee on seal was continued.

Dr. Robbins' proposed amendment, to allow the society to confer degrees, was again taken up, when, on motion of Dr. Barker, it was laid on the table.

Dr. John McCalla then delivered the following address as retiring president:

GENTLEMEN: The return of our anniversary meeting is an occasion of joyful congratulation, the gathering together of so many talented and influential members of the profession from widely separated sections of the State, for the purpose of devising ways and means to advance the interests of an important branch of the healing art, exhibits a praiseworthy devotion to the great cause of human good. Our thanks are due to the Supreme Author of our being for His continued mercies. We have been permitted to meet again for the purpose of strengthening each other's hands in the pursuit of an art and science intimately connected with the functions of health in the human system. There is a pleasure as well as grandeur in contemplating these annual reunions; coming from different points of observation as to a grand center, we have the combined results of industry, research, discovery and experience thrown into a common fund for the general good. To this general stock of knowledge each member should contribute; the mental and physical energies of every one in this association should be summoned to the production of something worthy of this depository of the society's knowledge; we should be continually adding to these stores the results of our experience, and never consider our professional education as completed; no one can reach the farthest boundary of science; a life-time is too brief a period for the attainment of absolute perfection in art. The popular genius of our American institutions is opposed to the formation of powerfully privileged orders, to command the amelioration or improvement of our citizens, and to this national peculiarity may be traced the origin of the numerous benevolent and scientific associations which have sprung up throughout the length and breadth of our land, and before whose moral power, ignorance, oppression and empiricism are being dissipated as the morning mist disappears before the

rising sun. The benefits resulting from association are acknowledged no less by the merchant, mechanic and farmer, than by the scientist; so necessary, indeed, is association to the advancement of science, that the latter has rarely flourished without the aid of the former. The various eleemosynary and scientific institutions so famous throughout the old world were at first organized in aid of the great professions of life; from small beginnings many of them have risen to gigantic strength, throwing out their combined wisdom in voluminous transactions. A foundation principle in associations of this character is the giving up of a few individual rights for the general good, a noble and generous self-denial, ever willing to submit to the will of the many, and always repaid by the inward consciousness of having performed a good act, and securing the higher esteem of those with whom we are associated. Animated by this spirit, and a desire to elevate the dental profession, a number of prominent dentists from several States of the Union formed the American Society of Dental Surgeons, some thirty years ago; this was the first known combined effort in this direction, and marks the beginning of a new era in the practice of dentistry.

As the necessity came to be felt for institutions specially devoted to the development of the principles underlying correct dental practice, the organization of the first dental college took place, and this was followed by others in different cities of the union, thus offering ample facilities for the pursuit of a knowledge of the several departments of dental art and science. The publication of the *American Journal of Dental Science* about this time exercised a highly beneficial influence upon our department of surgery, as the medium of intercommunication between the members of our own profession and the repository of much that was valuable in theory and practice, in inventions and discoveries. The old American Society served its day, and did it well; but as more liberal views came to be entertained in regard to correct dental practice, it was forced to succumb to one of a more republican cast. We now have two national societies, one of which is based upon the representation system, and we may safely say has been the means of calling into existence at least one-half of the present local societies throughout the land. In our own State are to be found several of this kind, some of them of many years' standing, and on whose rolls may be found the names of some of the bright-

est lights in our specialty. Yet one thing was lacking, *concert of action.* This desideratum could only be arrived at by a congress composed of representatives from the different bodies, and by this means the State Dental Society of Pennsylvania was organized and chartered.

One of the first principles of an association of this kind should be a friendly spirit between its members, mutual respect for each other, and that deference to the opinions of others which prevail among gentlemen everywhere. If brethren of the same profession do not live in harmony they cannot expect the world to treat them with respect. There is a disposition in the community to look upon those who indulge in tirades and inuendoes against their professional brethren as being no better themselves than they should be. Such a course, to say the least of it, is very unwise and should be avoided by all good men. Our common safety, and that of the community, requires that in regard to all forms of dental quackery we should "cry aloud and spare not." No honorable and well educated dentist will perform his professional offices at prices reduced so low as not to afford him the best materials for his operations, and a fair compensation for his services. The cheap dentist, so called, is ever held in cheap repute, and always rated at his own price. The character of our profession, and our duties to each other in the great cause of science, imposes upon us the sacred duty of counseling, advising and aiding those of our profession who may have been unfortunate, or who, by laudable efforts, are just entering the profession. Nothing will be lost to the veterans by a generous attention to the recruits. Let us elevate the standard of our profession, plant it upon the broad platform of medical science, and claim for ourselves and our profession the same respect and importance awarded to other branches of the healing art, and that, too, upon the same ground, that of a thorough scientific education.

The attention of this association was directed at an early period in its existence to the need which has been felt to exist in relation to legal protection, the passage of a law for the protection of the public against empiricism, has been urged upon the Legislature repeatedly without success, and we are forced to confess that while the practice of medicine and general surgery are surrounded by legal safeguards, the dental profession in this State, at least, is still an open field for the depredations of any adventurer who may

choose to prowl through the community. This evil, while generally recognized by the profession, has opened a door for discussion as to whether a law granting certain powers to the dental profession in this State will prove an adequate corrective. Another question is, who are to be the judges as to who are worthy practitioners: the State Dental Society through its board of examiners, or the dental colleges? we think the former; and our conclusion is that the passage of a law such as has been proposed will not only increase our local societies and give us a larger representation, but will very materially augment the resources and increase the usefulness of our colleges. Let us then hope for greater unanimity on this subject, and act upon the principle of "the greatest good to the greatest number."

Adjourned.

WEDNESDAY MORNING.

President in the chair.

After the minutes were read and corrected, on motion of Dr. Robbins a committee consisting of one member from each association represented was appointed to nominate officers for the ensuing year. The following gentlemen were nominated and duly elected.

President.—Dr. J. G. Templeton, New Castle, Pa.

First Vice President.—Dr. M. E. Gillespie, Pittsburg, Pa.

Second Vice President.—Dr. J. M. Barritt, Wilkesbarre, Pa.

Recording Secretary.—Dr. C. H. Bagley, Meadville, Pa.

Assistant Recording Secretary.—Dr. C. B. Ansart, Oil City, Pa.

Corresponding Secretary.—Dr. Saml. Welchens, Lancaster, Pa.

Treasurer—Dr. John McCalla, Lancaster, Pa.

Board of Censors.—Dr. A. B. Robbins, Meadville, Pa.; Dr. Charles J. Essig, Philadelphia; Dr. D. S. McCoy, Newville, Pa.; Dr. S. H. Guilford, Lebanon, Pa., and Dr. H. W. Arthur, Allegheny City, Pa.

Place of Meeting.—Oil City, Lancaster, Wilkesbarre and Philadelphia were nominated. On the second ballot, Oil City was

selected. The place for holding the next meeting of the society was afterward, on motion of Dr. Pierce, changed to Erie.

The following delegates to the American Dental Association were appointed:

Drs. Amos Wert, John Githens and J. C. Essig, of Philadelphia; Drs. Webb and Moore, of Lancaster; Dr. G. B. McDonneld, of Conneautville; Dr. F. Hickman, of Reading; and Dr. Robbins, of Meadville.

Delegate to the Ohio State Dental Society.—Dr. J. G. Templeton, of New Castle.

The following gentlemen were appointed by the chair, on the regular standing committees:

Executive Committee.—Drs. W. E. Magill, G. B. McDonneld, E. W. Pierce, J. G. Moore and J. Z. Hoffer.

Publication Committee.—Drs. C. H. Bagley, Samuel Welchens, John McCalla, Wm. M. Amer, J. D. White, G. T. Barker and A. B. Robbins.

The following essay was then read:

ON IRREGULARITIES OF THE TEETH--THE CIRCUMSTANCES FAVORING THEM, AND SOME SUGGESTIONS ON THEIR PREVENTION AND TREATMENT.

BY PROF. GEO. T. BARKER, D. D. S.

The subject of the influences which induce irregularities of the teeth, the circumstances favoring their continuance, and the means by which they may be prevented or obviated by mechanical appliances, is well worthy the most profound consideration of the dental surgeon. And although the views I may present may not be adopted by the profession as tenable, I shall yet feel satisfied if they serve to call forth thought and investigation. On taking a look at the jaws of the human species of the present time, we find that, with rare exceptions, the jaws are too small to accommodate thirty-two teeth in the arch. This is seen not unfrequently with those who have twenty-eight teeth in the jaws, fully erupted, and regularly arranged, but on the eruption of the wisdom teeth, great pain is experienced, and these teeth are obliged to take an irregular position at the base of the arch. It may be well for us to stop a moment and ask what are the causes which induce irregularity of the teeth. The thoughtless and careless among the dental profession have answered time out of mind, "hereditary influ-

ences;" but the term seems to me utterly without sense or reason, unless the subject is further elucidated, and the influences are explained by some statement why the teeth, not only of children, but parents, grandparents or great-grandparents, have been thus affected. It seems to me as if the true solution of the subject must be looked to by the adoption of the view that the jaws and teeth of man have been greatly modified from their original type by time; circumstances, habits of life, food, climate, and a general and universal departure on the part of man from those habits which were observed by the progenitors of our race. And that, as a consequence, our teeth are gradually but surely approaching a rudimentary condition, until, perhaps, we can look forward into the future dim vista of centuries and see spaces completely endentulous, or in that condition as seen in certain of our ruminant animals, where the gums of the teeth are present in the jaws, but are never erupted.

In the presentation of these ideas I do not mean to assert that I fully adopt the views of Darwin or Huxley, that man has descended from the anthropomorphous apes, as the connecting links are yet to be produced, the evidences being at present simply circumstantial and probable, and the discovery of organic remains will doubtless establish the truth or fallacy of the positions. To my mind the whole condition of the dental system seems to indicate a retrograde metamorphosis, not only in carious action, which seems so universal, but in irregularity, which is simply an expression of deranged vital force; for it must be admitted that the eruption of teeth, outside or inside the arch, is as much an abnormal action as the development of a tumor, the difference being simply in degree. It may be asked that I should explain what, in my belief, were the habits of the progenitors of man. I would reply, that to my mind they had all the habits of the present gorilla; that they were covered with hair, arboreal in their nature, lived upon uncooked vegetable and animal food, had enormous jaws and teeth for rending and tearing their prey, and that as generation after generation were improved by natural selection on the part of the best males of the best females, the race was by gradual development, and by the destruction of the weakest and most illy formed, finally brought to the state in which it exists at present. The limits of a paper are far too circumscribed to go into the details which are necessary to even

prove the probabilities of this position, and those interested are referred to the works of Darwin on variations of animals and plants under domestication, and the descent of man. I will make from the last named work a few quotations to prove that this subject, of the retrograde metamorphosis of the teeth, has not failed to attract the attention of this astute observer, nor has he neglected to detect that the lessened use of a part, or its diversion from a normal action, is invariably attended, if long continued, by a modification of the structure, and where by circumstances it becomes useless, it gradually becomes rudimentary, as seen in the fœtal organs and other parts in man and animals. On this subject of rudiments Mr. Darwin says:

"Not one of the higher animals can be named which does not bear some part in a rudimentary condition, and man forms no exception to the rule. Rudimentary organs must be distinguished from those that are nascent, though in some cases the distinction is not easy.

"The former are either absolutely useless, such as the mammæ of male quadrupeds, or the incisor teeth of ruminants, which never cut through the gums, or they are of such slight service to their present possessors that we cannot suppose that they were developed under the conditions which now exist.

"Organs in the latter state are not strictly rudimentary, but they are tending in this direction. Nascent organs, on the other hand, though not fully developed, are of high service to their possessors, and are capable of further development. Rudimentary organs are eminently variable; and this is partly intelligible, as they are useless or nearly useless, and consequently are no longer subjected to natural selection.

"They often become wholly suppressed. When this occurs, they are nevertheless liable to occasional reappearance through reversion; and this is a circumstance well worthy of attention. Disease at that period of life, when an organ is chiefly used, and this is generally through maturity, together with inheritance at a corresponding period of life, seem to have been the chief agents in causing organs to become rudimentary.

"The term 'disuse' does not relate merely to the lessened muscles, but includes a diminished flow of blood to a part or organ, from being subjected to fewer alterations of pressure, or from becoming in any way less habitually active.

"Rudiments, however, may occur in one sex of parts normally present in the other sex; and such rudiments, as we shall hereafter see, have often originated in a distinct manner. In some cases organs have been reduced by means of natural selections from having become injurious to the species under changed habits of life. The process of reduction is probably often aided through the two principles of compensation and economy of growth, but the later stages of reduction, after disease has done all that can fairly be attributed to it, and when the saving to be affected by the economy of growth would be very small, are difficult to understand. The final and complete suppression of a part, already useless and much reduced in size, in which case neither compensation nor economy can come into play, is perhaps intelligible by the aid of the hypothesis of pangenesis, and apparently in no other way. But as the whole subject of rudimentary organs has been fully discussed and illustrated in my former works, I need here say no more on this head.

"Rudiments of various muscles have been observed in many parts of the human body; and not a few muscles, which are regularly present in some of the lower animals can occasionally be detected in man in a greatly reduced condition.

"Every one must have noticed the power which many animals, especially horses, possess of moving or twitching their skin; and this is effected by the panniculus carnosus. Remnants of this muscle in an efficient state are found in various parts of our bodies; for instance, on the forehead, by which the eyebrows are raised. The platysma myoides, which is well developed on the neck, belongs to this system, but can not be voluntarily brought into action. Professor Turner, of Edinburgh, has occasionally detected, as he informs me, muscular fasciculi in five different situations, namely, in the axilla, near the scapula, etc., all of which must be referred to the system of the panniculus.

"He has also shown that the musculus sternalis or sternalis brutorum, which is not an extension of the rectus abdominalis, but is closely allied to the panniculus, occurred in the proportion of about three per cent. in upward of six hundred bodies. He adds, that this muscle affords 'an excellent illustration of the statement that occasional and rudimentary structures are especially liable to variations in arrangement.'

"Some few persons have the power of contracting the superfi-

cial muscles on their scalps, and these muscles are in a variable and partially rudimentary condition.

"M. A. de Condolle has communicated to me a curious instance of the long-continued persistence or inheritance of this power, as well as of its unusual development.

"He knows a family in which one member could, when a youth, pitch several heavy books from his head by the movement of the scalp alone; and he won wagers by performing this feat. His father, uncle, grandfather, and all his three children possess the same power to the same unusual degree.

"This family became divided eight generations ago into two branches, so that the head of the above mentioned branch is cousin in seventh degree to the head of the other branch. This distant cousin resides in another part of France, and on being asked whether he possessed the same faculty, immediately exhibited this power. This case offers a good illustration how persistently an absolutely useless faculty can be transmitted."

RUDIMENTS.

It appears as if the posterior molar or wisdom teeth were tending to become rudimentary in the more civilized races of man. These teeth are smaller than the other molars, as is likewise the case with the corresponding teeth in the chimpanzee and orang, and they have only two separate fangs. They do not cut through the gums till about the seventeenth year, and I am assured by dentists that they are much more liable to decay and are earlier lost than the other teeth. It is also remarkable that they are much more liable to vary both in structure and in the period of their development than the other teeth. In the Melanian races, on the other hand, the wisdom teeth are usually furnished with three separate fangs, and are generally sound; they also differ from the other molars in size less than in the Caucasian races.

Professor Schaaffhausen accounts for this difference between the races by the posterior dental portion of the jaw being always shortened "in those that are civilized, and this shortening may, I presume, be safely attributed to civilized men habitually feeding on soft, cooked food, and thus using their jaws less. I am informed by Mr. Brace, that it is becoming quite a common practice in the United States to remove some of the molar teeth of children, as the jaw does not grow large enough for the perfect development of the normal number."

Another proof of the modification of the dental structures is particularly shown among those civilized nations, as the English and Americans, who make the least use of their teeth for eating hard, dense food. Such races are particularly characterized by weak, defective and irregular teeth, while with others, as the Germans and Irish who use coarse, hard food the teeth are generally stronger, the jaws more fully developed and the teeth regular in their respective arches. Among the half-civilized and barbarous races we are informed that irregularity of the teeth is wholly unknown or comparatively rare. It may be assumed that the beauty of the human countenance has been purchased at the expense of the strength and perfect development of our teeth and jaws, and though this fact is not an agreeable conclusion, we have to deal with the human body as we find it and not what we would desire it to be. As a summary of the views presented, I would state that irregularity of the teeth is primarily the result of modification of form type, the result of non-use and that the influences acting on the parent, with the modifications, are both transmitted to the children, and these are what I would term hereditary influences.

There is another view which I would also present, without, however, claiming for it originality. It is the correlation which exists between different organs of the same body. This has been repeatedly recognized, and it may be safely assumed that the modification in size and shape of certain parts, as the lower extremeties, has also had its corresponding influence on the dental structures, particularly the maxillary bones. This view may seem to some as wholly fallacious and untenable, but it is not more remarkable than the changes in the male, which take place at the time of puberty, as seen in the amplification of the larynx, the growth of the beard, &c. If we examine any skeleton we will find that there is usually an appropriateness in the size of the osseous structures, showing that correlation of growth exists. In other words, you would look in vain among small though adult skeletons, for a jaw and set of teeth the size of which I show you, a cast of the dental structure of probably the largest man in the United States or Europe; but you would see, on the other hand, a small contracted arch, each part bearing a relation to the other. We must then in accounting for irregularity of the teeth remember that the jaws have been lessened in size by correlated growth

which has not been compensated, by like diminution in the size of the teeth themselves, though I have no doubt these are also much less than those in the jaws of the original "primates."

Having thus briefly traced these influences, which, by modification of structure, predispose to irregularity, we must not fail to consider others which might be classed as immediate predisposing causes, because they act directly through the parent, and intensify and develop in the children to a marked degree these hereditary tendencies. In this class we must notice irregular habits of eating, living, or gratifications of passions, and establish dyspepsia, consumption, scrofula, syphilis, or indeed any morbid conditions which we recognize as transmissible to offspring, and which sooner or later show themselves in modification of nutrition. One of the earliest evidences of such condition being abnormal dental structures, the deciduous teeth being early lost from decay, the permanent ones being irregular and proportionately defective.

It may now be asked if these influences exist, particularly those which I have described as favoring retrograde metamorphosis, can they be overcome by us? I answer, to a certain extent they can, though in the views presented I overthrow the teachings and practice of years, I am so far convinced of the truthfulness of the position that it is done without hesitation. To overcome these particular influences it will be necessary for most children either to lose the *first molar teeth, or one of the bicuspids* in each jaw, selection being made according to the structure and attending circumstances, each of which it would be impossible to detail in this paper, but which every competent dental surgeon ought to recognize. It is not to be assumed that it will be necessary in every case to pursue this treatment, but the vast majority will require it, and I doubt not that the requisite space gained between all the teeth as a consequence, will accrue to the benefit of the health of those remaining, as has been satisfactorily demonstrated by the experiments of Prof. Arthur, as tending to prevent, to a great extent, approximal decay.

When cases of irregularity present themselves the extraction of some teeth or tooth is usually imperative, though not always, and which one shall be sacrificed requires some thought and judgment, depending upon the age of the person and the kind of irregularity, and no rule can be laid down which can be adhered to; but there is one rule that can be established, and that is, that no set of teeth

are so irregular but they can be greatly improved, and that it may be accomplished at any age after the eruption of the permanent canines. The earlier it is attempted the better; but persistent effort will accomplish the result even at middle age and late in life.

Another agency which can be exerted, favoring an increase in the size of the jaws, is the encouragement of patients to partake themselves, and require their children to do likewise, of such food as contains the elements necessary for the nutrition of the osseous system, and which will also tend to induce greater growth, by favoring by its hardness an increased supply of blood to these tissues. For this purpose, I believe the daily use of dry toast in families, will be exceedingly useful. Again, the observance of all hygienic rules which favor health, will enable parents to transmit to children better constitutions, and more perfect osseous systems, to neutralize, to some extent at least, the tendency which exists on the part of the dental system to a retrograde metamorphosis.

I will now briefly detail to you my method of correcting irregularity without the aid of plates, except in some few cases, depending upon the tractile force of rubber bands, so placed on the teeth which are desired to be moved, that they will be drawn into required position.

Professor Barker here explained his method of operating by placing a ligature in the mouth of one of the members and exhibiting casts of dentures which had been corrected without the use of plates.

In the discussion of the above essay, Dr. Essig thought that by Prof. Barker's method of correcting irregularities the most decided force could not be obtained. He described his own method, which was to pass a bar of plate gold in front of the arch and fastened to caps over the molar teeth, with buttons on the outside of the band, to which are fastened ligatures passing directly to the teeth to be moved. The position of the button determining the direction of the force. When the distance is too small to obtain traction, the band may be perforated and the ligature passed through the opening to a button at some distance from the perforation. Black rubber should be used for the caps on the molar teeth on account of its strength and elasticity. He claims that in this way we can obtain any desired force.

Dr. Guilford remarked that when some teeth are capped, others

will elongate and interfere with the articulation, if the appliance be worn too long.

Dr. Robbins remarked that ligatures were frequently applicable, as described by Dr. Barker in the essay, but they cannot always be employed. He objected to extracting teeth for the correction of irregularities, except in special cases. Such practice would contract the jaw, when means should be employed to expand it. He did not use buttons on the band, but tied the ligatures around it. Sometimes used platinum wires.

Adjourned until afternoon.

WEDNESDAY AFTERNOON.

Dr. J. G. Templeton, president elect, took the chair.

Minutes of the morning session read and approved.

On motion of Dr. Welchens, the discussion on Prof. Barker's essay be postponed until Thursday morning, and that the regular order of business be suspended so that all new and miscellaneous business be disposed of.

Dr. Huey moved to have the time of meeting of the State Society changed, as it takes place at the most busy time for the city dentists, which is the principal cause of so few attending.

A discussion followed, and it was finally decided, on motion of Dr. Welchens, to strike out the clause fixing the time of the meeting from the constitution and insert it in the by-laws, when it could be changed at any time to suit the members.

On motion of Dr. Amer, it was resolved that when the society adjourned it be to meet on the first Tuesday in June, 1872.

Dr. Reading, delegate from the New Jersey State Dental Society, was welcomed and invited to take part in the discussions.

Dr. Welchens proposed in writing the following amendment to the constitution. To amend Article 4, Section 1st, to read: "The society shall hold an annual meeting at such time as the by-laws shall provide." Laid over one year.

The following essay was then read:

MECHANICAL ABRASION OF THE TEETH.

BY S. H. GUILFORD, D. D. S.

At the present time, when the profession of our choice is aspiring to and rapidly attaining that place among the learned professions which it is destined at no very distant day to occupy, the minds of its members are constantly employed in developing things already known, and in seeking out new facts which, when properly brought to light and developed, shall assist in raising her to her justly deserved position.

We have those minds among us which are particularly calculated to give birth to new ideas, and also assist in their development; and, on the other hand, we have those who, although not given to the propagation of new ideas, are specially gifted in apprehending them, weighing their value, and developing any good qualities they may possess; provided they possess any at all.

These two opposites, in reality component parts, are just what we need to develop our beloved profession. Neither is of value alone, and each is invaluable when joined.

While not arrogating to ourselves membership in the first class, we hope we may freely be accorded fellowship with the second, and hence to-day, if we treat you to nothing new, we hope to try and develop the old.

Amid the ever-varying subjects which have engrossed the dental mind in times past, and even until now, we think that childhood, youth and middle age have received, as they have indeed deserved, a fair share of our attention. First and second dentition have, from the beginning, been favorite themes for the author and lecturer, whilst the treatment of irregularities and filling of teeth have been among the most honored subjects of society, essayists and magazine writers.

It is, in our opinion, past middle and old age, which, if any, have been lacking in that attention which they have a proper right to expect from us, as laborers in the field.

As far as our observation and experience goes, it has been entirely too common for us, while devoting our best energies of mind and body to childhood and middle age, to think that the only attention the teeth of past, middle, or old age deserves at our hands is extraction and replacement. Older persons, it is true, are sometimes more remiss in their attention to their

teeth than they should be, and thus permanently induce or at least give license to decay. But it is generally done through the mistaken idea that the time has about come when all lose their natural teeth, and hence there is no longer any use in trying to save them. It is one of our highest duties as dentists, in the proper signification of that term, to correct this wrong impression, and to show by our words and actions that there is hope even for the elderly—that they may oftentimes save and use for years longer their natural teeth, instead of supplanting them with artificial ones, nature's great inferiors.

A thoughtful consideration of these facts has resulted in our deciding to offer you a few remarks, this morning, upon the "Mechanical Abrasion of the Teeth, and its Remedies."

This mechanical abrasion, as you all know, is a wearing away of the substance of the natural teeth on their masticating surfaces, and is seldom, perhaps never, seen except in persons who have arrived at that period of life when nature has ceased to fully repair the loss of wear and tear. Earlier in life, when the vital forces are in their prime, enabling nature from the abundance of her store-house to replace all that is taken from her, this waste is seldom noticed; but later in life, when her energies begin to fail, and the waste is as great as ever and perhaps greater, she begins gradually to lose ground and yield, though very reluctantly, the field to her enemy. This peculiar kind of abrasion is by far more frequently seen where the front teeth meet edge to edge instead of over-lapping each other as they should, although it is sometimes seen where the teeth have a perfectly natural occlusion. The two models which I have brought with me, for your inspection, are representatives of both classes, one of each.

Although this principle of waste exceeding repair after a certain period of life (and which is a universal law, noticeable throughout the whole animal economy,) and the meeting of the teeth edge to edge, are the principal causes of this abrasion, still they are generally assisted in their work of destruction by some other causes.

One cause is the loss of some of the bicuspids and molars of one or both jaws, thus throwing the great strain and burden of mastication on the incisors and cuspidati, and thereby giving them often double and triple the amount of work to perform that properly belongs to them; and another cause is the use of chew-

ing tobacco, which most persons who use it keep constantly under the process of mastication; and worse than that, in its destructive effects, is the grit or fine sand; always found present in a greater or less degree in every variety of tobacco prepared for this filthy use.

This grit, under almost constant attrition, will, as a matter of course, soon wear away a considerable portion of the tooth substance, and it is in the mouths of users of this vile weed that we have noticed this form of abrasion in its greatest extent. The effects of this mechanical abrasion present themselves from time to time to the eye of the dentist in every variety and degree of extent.

Oftentimes, when this condition has but just commenced, the effects are, perhaps, only the wearing off of the sharp points of the cuspids and bicuspids, or the straightening or flattening of the edges of the incisors; and again in others, where the teeth have been unprotected for a longer time, we occasionally see the six front teeth literally worn down to the gums.

At first, while the enamel only is being destroyed, no ill-effects or inconvenience are felt; but when it once reaches the dentine, or nearly approaches the pulp chamber, the inconvenience and pain resulting therefrom are greatly noticed and much complained of, and it is then most frequently that we are for the first time applied to for relief.

Frequently, indeed, in the great majority of cases, as this destruction goes on and nears the vital portion of the tooth, nature in a measure protects herself by throwing up her bulwark of defense—osteo-dentine—but eventually, as age advances, if the causes continue and no help is furnished, she has to succumb to her enemy, and the pulp becomes nearly or quite exposed. Serious as this evil is, and calling as it loudly does for relief at our hands, we do not find it even alluded to in any of the dental works that we have consulted, except in Harris, and he only devotes one page to it, hurriedly describing its characteristics and effects, and suggesting no relief or remedy whatsoever.

Whether the cases coming under his and other authors' notice were but limited in extent, or whether they considered them too insignificant to occupy a place in their works, we cannot tell, yet one thing we do know, and that is, that this disease, if we may so term it, is prevailing largely all over the country, particularly in

the rural districts, and it is time more notice should be taken of it and the question of its remedy be more generally discussed.

What means of relief shall we prescribe and administer when appealed to by sufferers from this calamity? There seems to us to be but three plausible and practicable ways in which we can bring relief to the patient:

First—Is the old and probably by far the most universally common way of destroying the pulps of such teeth as fast as they become exposed and troublesome, and then filling the canals with gold. One argument in favor of this treatment is, that it brings immediate relief to the patient; and another is, that it is probably the least expensive of all operations for permanent relief. The objections to it, however, are, that it does not prevent the future wearing away of the teeth, but rather, indeed, by loss of nourishment promotes it, and, also, half a dozen or more lifeless teeth in the mouth are never as desirable as so many living ones.

Another operation for relief consists in building up the crowns of the abraded teeth to their original normal shape and size. This is done by drilling a number of retaining pits or points in the dentine between the enamel and pulp, and from these by the aid of adhesive foil, and perhaps the mallet, building down the golden crowns. The first record of such an operation, within our recollection, is the one performed by Dr. Atkinson, of New York, for a gentleman from Sacramento, California, as described and illustrated in the January number of the *Dental Cosmos* for 1864.

An operation of this kind on some half dozen teeth well done, and intended to perform henceforth a large portion of the mastication of the individual, is certainly in the very highest style of art, and establishes immediately the reputation of him who performs it as a master in the art of filling. It also is praiseworthy in that it restores the teeth to their original shape. Though this style of work may commend itself to some few in the larger cities, there are objections to it which will, we think, prevent it from becoming the commonly accepted mode of dealing in such cases.

First of all, as it requires the best skill it will also command a very high price, which many would be unwilling to pay, and in the rural districts few would really be able to, especially if they were presented with bills such as our California friend was.

Next comes the objection of unsightly appearance. We approve of the building np of a single tooth or portion of one, lost

through disease or accident, and have frequently performed the operation; but to see a row of teeth half gold or more, where the teeth were alike in appearance without it, does not commend itself to our taste, and we think there are many who would likewise object to the appearance of it.

Another objection to these operations is, that if these crowns are built down with foil, and closely fashioned to their original shape the incisors must necessarily be rather thin at their cutting edges, and if they overlap the inferior incisors, as in many cases the original teeth did, we do not believe that they will be able to bear the strain for many years to which they will necessarily be subjected in mastication. If the teeth originally occluded edge to edge, and in restoring them with gold they be built down but part way, and left with rather broad tops, the strain of mastication being exerted in a direct line with the axis of the tooth, I believe they may endure almost any length of time and do good service.

There is, however, another way of administering relief to patients of this class, which, we think, possesses more advantages and is open to fewer objections than either of the previously mentioned methods.

It consists in the making and introduction of a plate of gold or silver of suitable thickness, covering a portion of the roof of the mouth, retained in position by clasps where practicable, and accurately fitting into and covering the concavities of the abraded teeth. To construct the plate, an impression is taken in the usual way, with plaster where it can be, and where this cannot well be done, an impression taken in wax will do.

A model is then made, after which the die and counter-die are prepared, and the plate, with frequent annealings, is swaged home to its shape. The plate, when swaged or while swaging, should be trimmed up to the exact shape of the outer margins of the teeth, and where these do not quite touch each other, the plate should be cut away between the teeth. It is usually swaged from a single piece of plate, and when the metal is firm and homogeneous in its character, there is little difficulty attending the process. To make the plate invisible, as it should be, it must be beveled to a knife edge at the anterior or buccal edge of each tooth.

If on trying it in the mouth it is found to touch too much at

one place, or too little at others, as will often be the case, matters must be adjusted by filing off in one case, or by the soldering on of an extra thickness of plate at various places in the other.

When, in the course of time, the plate becomes too much worn at one place or another, it is easily remedied by flowing a little solder on the worn portion, or by adding an extra piece of thin plate.

Sometimes it is desirable to add a few artificial teeth to your capping-plate to supply the loss of natural ones. In such an event the plate is swaged, clasps attached, and the bite adjusted, as previously described, and when all is satisfactory the teeth can be added as in ordinary cases.

The advantages of protecting abraded teeth by such a plate are, that the sensitiveness of the teeth to heat, cold, acids, etc., is entirely overcome as soon as the plate is introduced, because covered securely by the metal. Again, there is no unsightly show of gold; in fact nothing whatever is seen if the plate has been properly constructed. The clasps retain it firmly in place under all circumstances, and admit of its ready removal for cleansing and subsequent replacement. When constant use has worn away any part of it, it can be repaired, if there be no artificial teeth upon it, in a few minutes. It can be constructed cheaply, compared with fillings, and with very little trouble. It is strong and durable, thoroughly reliable at all times, and will give general satisfaction.

In all my course of dental study, in college lectures and text books, and in all the periodical dental literature that I have read, I have never heard such capping plates spoken of or alluded to. The first idea in regard to them I received was learning incidently that a man had worn such a plate made of silver, and though clumsily constructed and badly fitting, it occurred to me that the idea was a good one, and that if properly developed and a gold plate of the same kind were neatly made and accurately fitted, it would be very serviceable in such cases.

I proceeded to make one for a patient in the manner described to you, and I am free to confess that the success that attended my efforts quite exceeded my own expectations.

I have brought a model of his mouth with me. The occlusion of his teeth, as you see, was edge to edge, and more singular than all was the fact that, although eight or ten of his anterior teeth were worn off almost to the gum, he had all his bicuspids and

molars above and below in his mouth, and meeting each other in the most perfect manner. The other model beside it is one in which the occlusion was natural, and the abrasion consequently occurred on the lingual surface of the teeth, thus allowing their natural external appearance to remain unchanged. A gold plate was made for him, and he is now wearing it with the same satisfaction experienced by the patient first alluded to.

The little experience I have had in the construction of such plates, and the perfect satisfaction they have given in each instance, has led me to believe that they are just what is needed to prevent the further mechanical abrasion of the natural teeth, where it has already commenced, and it is hoped that the profession generally will take up the idea, give it a fair trial and then render a just verdict.

Dr. Moore thought that rubber would be a better material than metal, as described in the essay, for capping the sensitive abraded surfaces of the teeth, on account of its non-conducting properties.

Dr. Robbins said, that often in such cases we find apparently a chemical action and destroying influence set up, so that some teeth are worn away more than others; had formerly made caps to cover and protect the teeth until secondary dentine was thrown out; now prefer filling with gold, and, if necessary, destroying the pulp.

Dr. McDonneld prefers filling such teeth, but does not advocate always building to the original length and restoring the contour; frequently simply fills flush with the edge.

Dr. Hoffer thinks the abrasion of the teeth is not caused solely by the chewing of tobacco, but that it produces a disorder of the nervous system, which causes the grinding of the teeth during sleep. He thought the attrition was not done so much to the small particles of mineral substances in the tobacco as to its chemical influence.

Dr. Guilford said, that in one of the cases mentioned in his essay, the teeth were very strong and dense. The cause of the upper teeth becoming more abraded than the lower, is due to the the latter being smaller and having less of the dentine exposed.

Dr. Moore remarked that we very rarely see cases of abrasion in the teeth of females.

Dr. Welchens remarked that abrasion is found mostly in first-class teeth of that iron texture described in the books, and by reason of their low percentage of animal matter may be more susceptible to chemical influences, and where there is no direct mechanical cause it may be attributed to a reduction of vitality in the enamel, either by chemical action or advanced age; but it being more common in the teeth of tobacco chewers than others, in most cases it must be attributed to the use of tobacco.

Dr. Robbins said that abrasion sometimes continued after persons quit the use of tobacco.

Dr. Welchens had not noticed this, but if such was the case, it could be easily accounted for on the principles before alluded to. An excessive use of tobacco devitalizes the enamel of the teeth, and this decreased vitality would almost reach disorganization, in which case the abrasion would continue even though the cause was removed.

Dr. Moore in one case found the teeth had been much decayed, but decay had ceased, and what before had been the softest, had become the hardest.

Dr. McDonneld thought tobacco had more to do with abrasion than anything else. Abrasion, however, sometimes occurs when no tobacco is used, but not to so great an extent.

Dr. Elliott had seen a case where the teeth were worn down faster after discontinuing the use of tobacco than before.

Dr. Robbins recalled a case of a physician who had used tobacco forty years, and after discontinuing its use his teeth wore down more rapidly than before. In the South, where persons do not allow the tobacco to lay quietly in the mouth, but keep it constantly in motion, the abrasion of the teeth is the rule, and not the exception.

Dr. Young thought the reason of the upper teeth becoming more abraded than the lower, is by reason of the lower jaw being movable, and the lower teeth not having so much of the dentine exposed. The lower teeth operate upon the upper as the hammer upon the anvil.

Dr. Smith thought that abrasion occurred, not so much by the chemical properties as by the mechanical action of tobacco.

The discussion here closed.

Dr. Robbins offered the following resolution, which was adopted:

"*Resolved,* That the publication committee be requested to publish the transactions of this society, from its organization to the close of the present session, in one paper-covered pamphlet, and that the same be furnished to the members of the society at cost."

On motion of Dr. Moore, the committee was instructed to have five hundred or more copies of the transactions published at their discretion.

The following resolution, offered by Dr. Robbins, was also adopted:

"*Resolved,* That a committee of five be appointed to revise the constitution and by-laws, and report at the next meeting, provided that a law is passed to regulate dental practice before that time."

The chair appointed the following as the committee: Drs. Robbins, Welchens, McCalla, Amer and Hoffer.

Dr. Amer moved that the committee have the revised constitution printed on slips and sent to the members of the society. Agreed to.

Adjourned until Thursday morning.

THURSDAY MORNING.

The treasurer, Dr. Barker, presented his report, which was approved and sent to the proper committee.

The following essay containing opposite views to those maintained in the essay of Prof. Barker, was then read:

DEFINITE HUMAN STRUCTURE.

BY SAMUEL WELCHENS, D. D. S.

The essential basis of all organized matter is that peculiar elementary principle by which every living object obtains special conformation and character. It is the forming energy of organization, and constitutes the primitive power by which direction and limit in growth, and volume, and texture in fabric are attained. It is through this element that nature becomes diversified, and each species or class of living beings is made distinguishable

from others of the same genus, and that develops species and grades in the great divisions of nature, so extensively and universally displayed in her several kingdoms.

The human system differs in many material points from other animal bodies, and thus develops a *positive, peculiar structure*, characteristic only of its own intrinsic completeness, and governed by laws peculiar to itself alone. The formation of the cells, and their areolar, spongy tissue, and the regular and determinate arrangement of the fibres; and as organization progresses, the structure of the central organs and *their* functions, and the forces directing and aiding the operations of growth and enlargement, and the yet further transformation into nervous energy and muscular power, with *their* medium of change and recuperation; stamps the organism as not only the grandest piece of mechanism in nature, but that which is most emphatically the result of forces and conditions which aggregate in no other order of life, and which can be claimed by no other formative power.

The special feature of this superiority is the adaptation of the human structure to the endowment of the mental faculties. That predominating nervous energy which constitutes the mind of man, requires an organic machinery of a higher and purer character than is necessary in sustaining merely the instincts of the brute, which characterize the lower animals, and fades away as the complexity of the human fabric rises into a higher and more perfect development.

As there are grades and classes and differentiations in the lower orders of animal life, so also are there species and races in the "*genus homo*," not only indicating different tongues and nationalities, but a decided variance of mental power, with a corresponding character of structural arrangement. Each genus or cast has its peculiarity of color, texture and conformation, which distinguishes it from others of the same grade of being, with as much certainty as families of the lower animals can be identified. It is the "*human creation*," and as such, it sustains relations in nature vastly superior to every other form of organized matter.

The human mind has a two-fold influence upon the physical structure, which must be considered in order to ascertain how far it can affect the orderly exercise of the organs and their functions, or what bearing such influence can have upon the general health of the system.

Cultivation purifies the mental constitution and carries a similar process into the physical. When this is affected the tissues generally are purer and better developed, and the seeds of disease have no easy lodgment, by reason of such development.

The *will*, however, often creates antagonism through the passions and emotional exercises of the mind, which are difficult to harmonize. There is thus, from the same crowning endowment, conflicting tendencies, which, instead of giving energy and power to the functions, often force them into premature and general debility, from which disease and decay frequently flow. The asperities thus created can, for the most part, be speedily propitiated; and a more harmonious action of these two powers of the economy be established by a proper cultivation of the *moral* faculties.

MORAL CULTURE.

This species of moral culture, from the higher powers downward, in which the mind so materially helps to purify and strengthen the structure upon which it rests, and from which it in turn derives so much benefit, is another essential characteristic of the superiority of the *human* over the animal body. There is here a progressive, self-directing power which requires a finer fabric than the mute energies of instinct in the brute; and the harmonious exercise of the element of both the mental and physical system will exalt the individual to the level of that highest type of life to which all other forms of existence is subordinate, and which becomes responsible in the sight of God and man for every action.

In the above species of culture we desire to recognize the tendency and doctrine of the "*more general to the more special*," in remote and comparative physiology.

This idea of unity of the mental and physical systems, and this tendency from the more general to the more special, in the process of the development of the human body, must be regarded as a fundamental power of no ordinary significance, and is most beautifully illustrated in the *infant*. Here both systems are not only exceedingly feeble, but correspondingly general. The structure of the body does not partake of any *special* feature of strength, or rapid growth, as we see in the lower animals where this unity does not exist. But as enlargement and culture progresses, the organs conform to those laws by which they are

endowed, as the higher nature of the body is developed. The mental faculties are subject to a similar process of development, and by and through this sympathetic unity the *specialization* of the human structure is brought out as a leading characteristic in the formation and growth of the body.

The same thing is true in regard to the *savage*. Though in stature and intimate structure he is governed by the laws of his being, yet there is a *generalization* of power, and the mind and body both are gross, savage and brutal. But, subject this nature to a thorough process of moral cultivation and improvement, and a purer and healthier texture of body, as well as a higher intellectual status, will be the result. There is thus a gradual gravitating tendency in *cultivation*, from the gross generalizing character of the physical, as well as the mental system, which may be said to be peculiar alone to the human race. This improvement, from a similar process, obtains, of course, in the lower animals, and also in the vegetable. But the mental endowment gives the entire organism special power in throwing off the coarser qualities and assimilating the finer and more congenial elements in the grand scheme of "definite human structure."

This unity of the mental with the physical, is further illustrated through the channels of the *sympathetic system*. It is in this that the tissues, many of the organs, and much of the vascular system find a medium of influence from the passions and emotional exercises of the mind. The caliber of the arteries and the circulation of the blood are, to some extent, regulated and often materially affected by this power. Examples of this influence upon the circulation may be cited in the palpitation and rapid action of the heart produced by an agitated state of feeling, or in syncope or suspension of the heart's action occasioned by a sudden *shock*. In the dilatation and contraction of the arteries, as in blushing or turning pale, and the sudden increase of the salivary, lachrymal, and mammary secretions, which are influenced and increased by such action of the arteries that supply these glands; the effects of the sympathetic and emotional action of the mind are at once conclusive, and show how far the organic structure is, after all, subordinate to the mental, and the effect through this sympathetic medium the one has upon the other in an orderly and harmonious exercise of this unity.

The same phenomena, but with changes much more sudden and

extreme, takes place when the whole system is convulsed with rage, anger and hatred, and the abuses of dissipation. Aberrations and disease in such cases are not always the immediate result—pathological conditions do not suddenly appear; but the bearing upon the finer qualities of the tissues, and the capillary network, will be apparent in the eventual and gradual modification and wearing down of the higher and nobler powers of the body, and those gross, brutish elements above referred to will be revived and established.

Cultivation may restrict and modify those emotions, or the want of it may allow them to run riot and drag the creature into savage life, or to the level of the brute; but however low such a nature may range, the elements of a finer and higher life are present, and it can attain to the true destiny of the perfect man, when the proper means and conditions are observed. This then displays a type of organic structure to which no other order of life can lay claim, and which must be recognized as peculiar to the *human race alone.*

The highest order of mere animal life must range far below these characteristic attributes of man. Even when the animal possesses a certain capability of adapting means to ends, and of instituting measures of safety and self-preservation, its physical nature is still destitute of that completeness which alone can make it a truly independent agent.

PHYSICAL CHARACTERISTICS OF THE HUMAN BODY.

Leaving those general characteristics of the mental powers, however, and instituting an examination into the tissues, organs, and the capillary system, the same marks of superiority present themselves. The purity, delicacy, and exquisite quality of *bone*, *muscle*, *nerves* and *fibres*, all adapted to the forces and powers of the *intellect*, constitute the crowning glory of the *human* over the *animal.*

In the teeth of man this higher type of structure presents itself with as much prominence as is displayed in the other parts of the body. In all the details of their histological structure, the attributes of this higher nature are most conspicuous in the *quality* of the several species of tissue of which they are composed, thus stamping them at once as the finest and most perfect structure in nature, and that, too, eminently adapted to the economy of which they form an important part.

The formation of the dentine which is a process of calcification of the pulp which emenates from the *papilla*, is the first stage of development of the tooth; and the tissue thus formed is not only a display of the finest principles of growth, but it seems to be the primary and essential fabric both in the structure and the subsequent health and durability of the organ. It constitutes the medium of vitality to the tooth being nourished when formed, directly from the pulp, and *indirectly* through the cementum, by the periosteum. This formation taking place at a period of life most susceptible to the impressions and interruptions of functional activity, often injures the *texture* and *organic character* of the entire organ. The histology of the dentine is thus given by the most approved authors.

"The dentinal pulp is at first composed of a mass of nucleated cells held together by a network of delicate fibres and bands constituting an imperfect form of areolar tissue, the interspaces between them being occupied by a homogeneous plasma. In the part which is nearest the coronal surface of the tooth when calcification is about to commence, the areolar tissue has usually disappeared and its place is occupied by a finely granulated gelatinous substance. The cells are at first disposed without any regularity in the midst of this; but immediately preceding the conversion of the pulp into the dentine, the cells are seen to enlarge and to become arranged in lines nearly parallel to each other, and perpendicular to the coronal surface of the tooth; they then elongate in such a manner that their extremities come into opposition; and they finally coalesce so that each row of cells forms a continuous tube. Whilst this change is in progress, the gelatinous intercellular substance is becoming consolidated by calcareous deposit, which also hardens the thick walls of the tubes so that their interior, formed by the coalescence of the original cell cavities, remain uncondensed, thus constituting the dentinal tubuli. This process takes place first on the surface of the pulp, and gradually extends inward. As the more external and larger cells become hardened, the inner ones increase in size, assume the linear arrangement, and in their turn become converted, with the intercellular substance, into tubular dentine, until at last the great bulk of the pulp is thus transformed, leaving only a comparatively small portion, which, with its nerves and blood-vessels, occupies the central cavity of the the teeth."

There has been considerable speculation, and some difference of opinion, by leading microscopists and authors, in regard to the character of the fibrils thrown out from the body of the pulp in this interesting formative process, and which are supposed to occupy the inter-cellular spaces of the dentinal tubuli which extends with more or less regularity into the substance of the enamel. The existence of the soft fibres of Tomes is not disputed, but their terminal points are questioned by Beale, who holds that instead of those terminal points, they break up into indefinite numbers of fibrils in the germinal matter of the pulp. Beale's doctrine is, that there are no terminations to the nerve fibrils, but that their circuit is continuous, so that there is no break in their attachment to the nervous centers. Of this, and of the peculiar character of the substance of these fibres, it is not my purpose here to speak; suffice it to say, that there *are two* substances which had their existence originally in one, and it is to the definite and peculiar structure, the laws of appropriation and assimilation which separate the elements composing the several tissues into those respective substances, forming enamel on the one hand and dentine on the other, to which I desire to call attention.

It is the fine and perfect character of the organization as displayed in this minute arrangement of the cells and fibres, and the chemical equivalents and affinities by which this formation is effected and rendered still more pure and complicated by reason of the fact that in the human subject these organs are formed *longer after birth*, than in the brute, thus not only characterizing the entire structure as of fine texture, but bestowing a purer fabric to the organ itself as the result of a more mature vitality, that develops the species of organization peculiar alone to man.

We do not wish to intimate that this process belongs exclusively to the human race. But the cases of animal structure are rare where *all* the stages and peculiarities of dental formation known to science are embraced in the process of dentition, as in the human body. It commences with the *papilla* of embryotic life, and proceeds with a regular progressive energy through the series of *open follicles* to the *sacular stage*, and, as we have seen, through the calcifying process, where each element is set apart by the law of appropriation to build up its respective tissue within the walls of a capsule; and finally the *eruptive period*, with the capsule investment condensing into the *cementum*, which furnishes at once

a medium of outward protection and nourishment to the dentine forming the root and neck of the tooth; and then, too, the process by which the enamel is rendered more dense and better able to perform its office by virtue of an enduring texture thus established, is a combination of forces and conditions that cannot be sustained, except by a nervous energy and purity of structure which is alone capable, by its innate excellence, of the support and physical development of the human body.

THE ANIMAL STRUCTURE.

In the animal, as well as in the vegetable structure, the principle of growth by new formations from persistent *pulps and cells*, either in the formation of the teeth, or in the entire structure, bestowing the power of rapid formation, when there is a corresponding waste, seems to be the leading characteristic by which the health and duration of the body is preserved and perpetuated. The waste of tissue is thus supplied, and this coarse, open organic formation is the channel through which this process is made easy, and is generally accomplished. Hence, if there are functional abberations and derangements, the body of such an organism will die out rapidly and without remedy; or, an active and speedy recuperation takes place by reason of its low, open organic powers, leaving no room for the slow and gradual decay of any special organ or tissue, or an extended pathological condition of the whole system. Such structures being more general than in man, there is not sufficient vital energy to sustain a heavy drain upon its forces, and it succumbs to disease that would have no appreciable effect upon the human body.

This peculiarity and power is another evidence of the complicated machinery of this amazing human fabric; and is an explanation of nature's plan in bestowing texture, duration, and *long life*.

If animals lived as long, and fared as sumptuously as man, and possessed an organization in which so many finely constructed tissues and highly vitalized properties and conditions are involved, and every corporeal ingredient not only thoroughly refined, but so minutely poised, as that health and disease, and the elements of life and death are continually running side by side in the same channels, as is the case in the human structure, then, indeed, might we expect the same relations to the world, the same endowments and attributes, the same tendency to decay and distress, and the same powers of endurance and longevity for the animal.

It is admitted that in some of the characteristics just enumerated, there is a striking similarity between the mere animal and the human structures. But in every instance, whether in duration, iongevity or instinctive powers, there is a special delicacy of texture and fabric throughout the entire human system, that can nowhere be found in the lower animals. This is the order of nature which constitutes man the crowning glory of the creation. It is a structure which, by virtue of this exquisite quality, is especially designed to receive the endowment of that higher nature which proceeds from the intellectual and moral faculties.

There are immutable generic laws too, which fix a line of demarkation between the brute and the human that can never be crossed even though we give the consideration that is claimed by naturalists to the subject of monstrosities as a medium for such transformation.

Nothing so grand and perfect as the human form can ever descend (?) from the brute creation, much less from a monstrosity, which it is said "can have no issue."

Nothing in science has ever yet been discovered to break down these barriers between the human and the animal, or that will abrogate the laws which have constituted them such.

The human body then rises as a gorgeous fabric, grand and complete in all its details, to apprehend, support and assimilate its crowning intellectual endowment; and the harmonious, orderly action of the *two* constitutes that peculiar moral status which consists in a temperate and intelligent use of means to ends, of the adaptation of the will and the passions to the wants of the functions, so that the whole structure may be equal "to the days of the months of the years of man's pilgrimage here upon earth."

The essayist entertaining the opinion that in many essential points the human structure was far superior to the animal structure, and that the teeth of man are the highest type of organized matter,

Prof. Barker in reply said, that the essay just read contained views entirely opposite to those held by him, and it should be studied before discussed. He objected, however, to the advanced position in organized matter given to the human teeth. He thought the dentinal structure of man is not superior to that of

the gorilla. They were mere appendages depending entirely upon the system, and must, in the nature of the case, partake of the nature and character of the body to which they belong. The human form was becoming rudimentary in structure, and consequently there is a retrograde matamorphosis in the human teeth. The nervous system, too, in some animals is similar to man; that of the chimpanzee resembling that of man, and not only this, but the vocal organs also are similar. The dog has memory, shame and fear, as in man, differing only in degree. There are no really perfect sets of teeth.

Dr. Welchens said that there were no evidences of the human form becoming rudimentary. It is, and ever has been, the most advanced and most perfect of all animal structures, and if there are signs of weakness or decay, they proceed from the habits and customs of society, and the kind of food that is used. He denied that there was a retrograde metamorphosis in the human teeth, and held that the elements of a perfect development were always present; all that was necessary was to be as careful with the body as we are apt to be with a good animal, and this extending through generations would restore that strength and texture of body and teeth which we have lost by our modern modes of living. For the human structure to become rudimentary it must lose all the essential characteristics of its advanced civilization.

Prof. Barker further defended his theory of retrograde metamorphosis in the dentinal structure. Evidences exist that there are no perfect sets of teeth, but in all we find decay and irregularities. We may improve the structure in different ways, among others by the extraction of the six-year molars, a practice which will become the rule and not the exception. If we can improve the general health of the parents, and secure increased nutrition of the teeth, we can finally obtain perfect teeth. We should advise against the marriage of unhealthy persons.

Dr. Robbins thinks that the six-year molars should by all means be preserved to secure a better development; does not advocate their removal in the correction of irregularities; and if it be defective, would remedy the same by proper treatment and filling.

Dr. Moore thought the extraction of the six-year molars should only be resorted to as the lesser of two evils—the deterioration of the teeth or the narrowing of the jaws.

Dr. McDonneld advocated the preservation of the first molar.

If the attempt to save it failed, the treatment was not commenced early enough.

Dr. Guilford thought that when defective six-year molars are retained the other teeth are injured; did not wish it so, but thought, with Dr. Barker, that the day will come when such defective molars will be extracted as a rule.

The discussion here closed.

Dr. Essig explained the manner of using Dr. Jack's matrix. Teeth are first separated by chisels or otherwise. He uses Turkish boxwood wedges. Form the cavity, smooth the surface and insert the matrix. When an appoximal tooth is out, take the impression and make a matrix of rubber, fitting up against the surface of the tooth to be filled, or against the matrix placed in position, and extending to the nearest tooth. When a tooth is isolated a band of a suitable material may be fitted around it. With the matrix a filling may be made more solid than in any other way.

The following essay was then read:

ANÆSTHESIA.

BY M. H. WEBB, D. D. S.

When we go back in history and find that a desire for conquest on the part of rulers of empires induced them to plunge their countries into war, which, "yoking the red dragons of his fiery car," caused thousands of their countrymen to endure the most excruciating pain, we find then as now the same innate desire for something to mitigate suffering. As we ponder over the ancient records leading down to the thirteenth century, we find that one Theodoric then conceived the idea of painless operations, and gave a recipe, denominating it *spongia somnifera*.

From the dawn of this idea, we find that all along the deep vista intervening, there were discoveries made in this direction that served as beacon lights to guide one onward to the present century, when we find anæsthesia to be one of the grandest triumphs of science, and the greatest blessing to suffering humanity the world ever knew.

Although ether was known in the thirteenth and fourteenth centuries, protoxide of nitrogen, discovered by Priestly in 1776, and Sir Humphrey Davy, from his experiments with various gases, demonstrated the character of the latter about the year 1798,

when he was led to believe that some such gas or vapor might, by inhaling it, produce insensibility to pain, yet these principles lay dormant until 1844, when one of New England's sons—Dr. Horace Wells—did, from their embryonic sleep, wrest those anæsthetic properties which were destined to be the anchor of hope for the suffering. Dr. Wells, at the time of this discovery, also entertained the same idea of ether, yet this principle in ether was afterward made manifest by Drs. Morton and Jackson, of Boston, and soon after the public had an opportunity of hailing the advent of this anæsthetic agent under the name of *letheon*. Along through the catalogue of anæsthetic agents we find chloroform, which, in connection with the two already mentioned, makes up the trio of general agents that come prominently before us. The anæsthetic effect of this agent was demonstrated by Prof. Simpson, of Edinburgh. Now that these and other agents have been so long and favorably known and employed to induce anæsthesia, with but comparatively few unfavorable results, none should desire to go back a century and have those who must undergo a severe operation, subjected to such a shock, that would of itself bar the avenues to recovery, quite as much as these analgic or suspensory agents occasionally do. However, we know that there are those in our profession who, whilst considering the use of anæsthetic agents in dental surgery, regard them as unnecessary. If there be one in this assembly whose heart beats warmly for a patient having a peculiar nervous temperament—a patient who looks with utter horror upon anything like a forcep—how can that one, how can any one, deem it else than advisable to judiciously administer an anæsthetic and save the patient a severe shock resulting from a painful operation?

In assuming the responsibility connected with this specialty, one should thoroughly understand all the encephalic tissues, and in fact it is necessary that we understand all the parts beneath the flimsy garb of humanity and be able to see mirrored forth, especially so far as physiognomy is concerned, the inward workings of the soul.

In entering more minutely into the subject of anæsthesia, we cannot but say that we deem it one of transcendent importance to the practitioner of major or minor surgery, one to which we cannot devote too much attention.

Anæsthesia, derived from *anaisthæsia*, from *an-a*, meaning a neg-

ation, and *aisthanomai*, to perceive or be sensible of, is deprivation of sensation, or that we may render so latent the duty of the centripetal or sensory nerves as not to be cognizant of pain while undergoing any surgical operation or painful condition.

Of the many agents for inducing this state, we find chloroform, ether and protoxide of nitrogen to be almost entirely employed; and, as all anæsthetic agents have nearly the same result, yet may differ in their specific elements, we will first take into consideration these agents and then pass to their physiological action.

Chloroform, the most active anæsthetic, is prepared from chloride of lime, water and rectified spirits, commingled and distilled. When pure, if dropped upon the hand it should almost immediately evaporate, leaving no stain or odor. It is colorless, has a sweet taste, and a more pleasant odor than ether.

Containing two proportions of carbon, one of hydrogen and three of chlorine, a non-supporter of combustion, it should be administered with the utmost caution, and during its administration the great danger of holding the sponge or napkin too closely to the mouth of the patient should be avoided by frequently admitting atmospheric air; else anæsthesia will follow too quickly, and this agent not supporting life, cardiac syncope may be the result. It is a powerful sedative, and, interfering with the normal circulation of the blood, the pulsations of the heart should be watched. The patient should be in as much of a reclining position as possible, that the blood may be driven the more uniformly to every part of the system: but this position does not suit the dentist. Taking into consideration these facts, and that death occasionally occurs from the use of this agent, we may justly say that it should never be used except by the most intelligent and able operators, and in connection with ether when the latter proves too exciting or fails to produce the desired effect. Ether, the most tried, and by many considered the most true anæsthetic, is obtained by distilling rectified spirits with oil of vitriol. Containing, as it does, one proportion of oxygen, four of carbon and five of hydrogen, it is a better supporter of life than chloroform, and during the first stages of anæsthesia by its use, a stimulative effect on the brain is experienced. This is, however, transient, for when the cerebrum is affected the stimulation begins to subside and the condition of languor, experienced by patients after its administration, proves that it acts with equal power as a sedative. Different operators

have different modes of administering anæsthetic agents, but experience proves the following to be the most satisfactory:

Every convenience should be at hand, such as water, napkins, etc., and when a patient wishing an anæsthetic administered enters the office, the operator should show no fear or anxiety, but should enter upon his duties with the utmost composure and confidence. A sponge, covering the mouth and nostrils, or if that be not at hand, a napkin loosely folded should be procured, on which pour about two drachms of the liquid. Place the sponge or napkin to the mouth and nose, but far enough distant to allow the patient to take free and full inspirations, and that the strangulating sensation, which usually occurs when the vapor is first applied, may be avoided. When the patient exhales, draw the sponge to one side until inhalation again recurs, when it should be replaced, and so continue during the administration. This admits a portion of atmospheric air, and allows the exhalations to pass unobstructed. As the influence of the anæsthetic progresses, more of the liquid should be added, and before the patient enters the unconscious state, the operator should request that the mouth be opened, if not already so, when he should place the fingers of the left hand in such a position as to keep the jaws apart, and watch the pulsations at the temporal artery. In the administration of anæsthetics, the operator should take the helm and guide the whole matter, not allowing the patient any antagonistic ideas or demeanor.

Protoxide of nitrogen, or nitrous oxide, composed, as the name implies, of nitrogen and oxygen, is prepared by decomposing nitrate of ammonia. It is a colorless, sweet tasting, inodorous gas, and since its introduction as an anæsthetic agent, it has proven to be the safest, for even in the hands of unskillful and inexperienced operators no serious accident directly from it has yet occurred; yet it should be administered as any other anæsthetic, understandingly and with caution. It should be well prepared, not by allowing some one to prepare it who is careless and ignorant, but, in a word, everything should be done in a manner corresponding to the importance of the agent, and the effect it is to produce. The *modus operandi* of its preparation is familiar to all, without taking it into consideration here. This anæsthetic is administered through a mouth-piece from a small rubber bag, or directly from a gasometer, the latter being by far the better plan. The bag is inconvenient, by no means attractive to the view, and

very often does not contain sufficient gas to produce anæsthesia. The mouth-piece should be large enough to admit free and full inspirations and cover the lips of the patient, the nostrils being held so that no atmospheric air enters with the gas, or not sufficient to dilute it and interfere with its action. As this agent more nearly resembles the gases normally held in solution in the blood, and may be considered, in this respect, also the safest anæsthetic, we find that when it is inhaled and takes the place of oxygen, the color of the blood remains unchanged, and when driven to the capillary system we notice a dark-blue appearance, especially about the lips.

The vapor of chloroform and ether, not being carried to that extent in the capillaries that gas is—chloroform being a sedative and ether terminating as such—we do not notice that dark appearance characteristic of nitrous oxide. The gas is eliminated from the system more rapidly than the vapor of either of the other agents.

During the administration of an anæsthetic, the operator will notice that there is sometimes a tingling sensation in the fingers and toes, and, at the same time, as the effect is carried to the cerebrum, will find that the olfactory ganglia, or bulbs of the olfactory nerves, situated anteriorly and at the base of the cerebrum, become affected, the patient losing the sense of smell. The tubercula quadrigemini, the ganglionic centers of the optic nerves, afterward become affected, when we notice a dilation of the pupil. At a distance back and below the fourth ventricle, is the bulb of the auditory nerve, and when anæsthesia is carried beyond this and below the origin of the sensory branch of the trifacial nerve, and the sound of the voice is unheard, the operator can perform any minor operation; but for those of a greater extent, the effect should be carried still further.

Too many operate before the functions of the cerebellum are suspended, and when the pons varolii is only stimulated, at which time the operation will be attended with more pain than if an anæsthetic had not been administered.

Unconsciousness, following the use of anæsthetics, is indicated by the appearance of the eye, relaxation of the muscles, snoring, the faintness of breathing, incapability of hearing, etc. When snoring occurs it is an indication that the muscles of the palatine region are relaxed, causing their vibration; but this is physiological,

while if the anæsthetic be carried still further, stertorous breathing takes place in the larynx, which breathing is pathological and is caused by the laryngeal branch of the pneumogastric nerve becoming affected. Carry the anæsthetic a little further and the whole ganglionic portion of the pneumogastric nerve will become involved, when respiration ceases, the lower jaw drops, and that dread monster death lays hold of the patient. If asphyxia follows the use of anæsthetics the following methods, among others, are employed to restore the patient, viz.: dashing cold water into the palm of the hand, and to the face, insufflation, flagellation with the end of a wet towel, and the battery; by placing the positive pole on the side of the neck and the negative about the cartilage of the seventh rib.

To give fixed and definite rules where anæsthetics should be administered, and where withheld, is quite impossible. Suffice it to say that they should be denied to pregnant females and during the catamenial period, in diseases of the heart or lungs, and it would be best were they not administered to any but those in a healthy condition. The physiological action of anæsthetic agents is a subject upon which there are many diversified opinions. Dr. Sampson, in his work on chloroform, expresses the belief that anæsthetics act "by altering the physical character and physical properties of the blood;" while Dr. Snow entertains the opinion that their action is due to "deficient oxidation of the blood." Others contend that anæsthetics act *directly* upon the nervous system,* and not by deficient oxygenation of the blood; to sustain which assertion animals have been submitted to an atmosphere containing a deficiency and an excess of oxygen, the result being in favor of said assertion—the animal not becoming anæsthetised. But were the gases of that atmosphere *mixed* or *chemically combined?* From inhaling a *mixture* of nitrogen and oxygen, in the same proportion as they exist in nitrous oxide, we fail to observe any effect but that of hyper-oxygenation; whereas, when these gases are *chemically combined*, as in the gas resulting from the decomposition of nitrate of ammonia, a hypo-oxygenation follows when it is inhaled, resulting in anæsthesia.

If nitrous oxide should be fully decomposed and the oxygen set free to be appropriated by the tissues, leaving nothing but the

*Dr. Richardson, Dr. Thos. W. Evans, and others.

nitrogen remaining, the effect would evidently be similar to an inhalation of a simple mixture of the gases. As an antagonistic proof that it is not decomposed, we may notice the fact that, when exhaled, it remains unchanged in principle, yet is diluted with carbonic acid and vapor, which accompany it from the system. As a portion of the oxygen is disengaged to support the combustion of a lighted candle, when plunged into a jar of nitrous oxide, it is argued that the same decomposition occurs when the gas is inhaled, *and that therefore it is the gas is so stimulating. As we have seen that when nitrous oxide is decomposed and a simple mixture of the two gases is inhaled, no anæsthesia follows, we cannot, therefore, attribute the stimulating effect of nitrous oxide to this, but rather to the fact that a similarity exists between nitrous oxide and the gases normally held in solution in the blood.

Dr. Thomas W. Evans, in one of his articles published in the *Dental Cosmos* some time since, asserts that "it is absolutely impossible to produce as rapid transitions from one physiological state to another, by depriving the subject of atmospheric air as is followed by the administration of anæsthetics." "In this," he says, "the theory that anæsthetics act directly upon the nervous system finds its strongest support—as in the human adult scarcely twenty seconds pass from the commencement of the inhalation of nitrous oxide, before the whole nervous system begins to become conscious of the action of the agent."

This assertion is disproved by the fact that the circulation of the blood is completed in about thirty seconds, and that anæsthesia with chloroform occurs in about the same time, showing that anæsthetics do have time to act by causing deficient oxygenation of the blood.

By atmospheric pressure, brought into play by contraction of the diaphragm and muscles of the chest, the trachea and the larger of the bronchial tubes are filled, and the air is then diffused throughout all the ultimate cells, and is thus brought to the blood as it passes through the pulmonary capillaries. The air-cells are supplied by first contracting and driving off the carbonic acid and vapor, furnished them by venous blood through the plasma, and then inviting, by their relaxed condition, the advance of oxygen from the atmosphere, which passes through the wall of the cell, the wall of the blood-vessel and the sac of the blood-disc,

*Prof. J. H. McQuillen.

all in about two seconds. When the blood is deprived of its oxygen by the inhalation of an anæsthetic agent, the venous blood does not pass as such to the arteries, because the absence of oxygen does not prevent the carbonic acid being transmitted through the plasma to the air-cells and then driven off by their contraction, except when the blood is overcharged with it, as when oxygen is inhaled, when some may indeed enter the arteries, in addition to that normally present. However, when a gas or vapor is inhaled, which, to a great extent, deprives the blood of oxygen, the arterial, in consequence, partakes of the color of venous blood. As the introduction of oxygen into the red globule causes the coloring property—the hemato-globulin or crourine—to assume an arterial or florid hue, so in the deprivation of oxygen the blood remains livid as seen when the globule has discharged its cargo of oxygen to the plasma and enters its venous channel to transport its effete carbon to the lungs, where is is discharged into the broad ethereal expanse. When the carbonic acid is driven off by the contraction of the air-cells, their relaxed condition invites the atmospheric air, gas or vapor, as may be present in the larger bronchial tubes, and is transmitted to the blood, which pursues its way onward through the arterial system.

A province of the blood then is to convey oxygen, the life-giving principle, throughout the system, giving life and power to every part, and to appropriate, in its recurrent venous circuit, all the carbonic acid and vapor resulting from a waste of tissue.

As we ascend the scale of animal existence, from the lower types to man, we find that, like the circulatory, the nervous system in the lower animals is simple, yet in man it assumes an immensity corresponding to his elevated position.

For twenty centuries numerous problems have been in contemplation in reference to this wonderful system, yet far out into the dim distance of future ages there will, doubtless, emerge new truths which will emblazon the countless pages yet to be written on this the grandest subject of physiology.

By the investigations of physiologists we learn that the nervous system is made up of centripetal or sensory, and centrifugal or motor nerves. The centripetal are, as it were, a labyrinth of cords, like unto the iron nerves traversing a continent, which transmit, with the rapidity of lightning, to the capital of a nation, impressions made upon them. The centrifugal are those nerve fibres

which ramify throughout every part, and conduct that which is communicated to them to its destination.

The arteries, while traversing the system in company with the nerves, transmit oxygen to them, and thus maintain their power, for it is a settled fact in physiology that the functional activity of the brain and nervous system depends upon a copious supply of arterial blood—blood containing oxygen.

Take away this vital principle, let there be inhaled some gas or vapor that will interfere with the oxygenation of the blood, and we find the whole system affected in consequence, a loss of power is experienced, and if such inhalations be persisted in we have insensibility. *Is this not anæsthesia ?*

Those organs presided over by the involuntary and semi-voluntary nerves, the heart and lungs, not becoming affected, except when anæthesia is carried too far, proves that the whole nervous system is not under the effect caused by the presence of an anæsthetic, and that before this can be accomplished the effect must be transmitted to the brain mainly through the carotid and vertebral arteries, which carry to that organ about one-fifth of the blood in circulation. From the changed condition of the blood, in its not possessing the necessary supply of oxygen, but another gas, or a vapor, instead, the seat of intelligence—the cerebrum—that of co-ordination of motion—the cerebellum—and the pons varolii become affected, and if the effect be carried too far down the medulla oblongata the result will prove fatal.

Anæsthesia, then, is the suspension of the whole intellectual faculty for the time, a loss of power on the part of the brain to receive impressions, and, indeed, as is proven by a peculiar tingling sensation in the fingers and toes when the anæsthetic is being administered, indicative of a general loss of power on the part of the sensorial system, and when the cerebellum and pons varolii are affected, an inability to communicate with the system through the motor nerves.

When anæsthesia is carried this far, motion can be communicated by passing a rapid intermittent, induction current from the medulla oblongata to the lower extremities, the battery acting as an outer brain, supplying power without intelligence. This was proven by Dr. Richardson in his experiments on large pigeons, which, when connected with the battery, rose from the lecturer's table, extended their wings, opened their eyes, and seemed as if

restored; when disconnected they relaxed again into the anæsthetic state. From interpretation, then, guided by comparative physiology, we may consider this true in man.

When anæsthesia is carried to that extent where the functions of the cerebrum, cerebellum and pons varolii are suspended, and but a slight advance would involve the link that binds the patient to existence, the thought arises in the mind of the operator that before him sits one whose life is in his hands, and that were he to allow the influence of the agent so to involve the medulla oblongata as to paralyze the whole ganglionic portion of the pneumogastric nerve, that soul might take its flight to another world.

Methinks what an impending fate might await the subject; should that spirit be prepared, how gladly would we feel inclined to believe that an hyperion joy would await the casket of humanity in exploring the regions of immortality, and yet still soaring higher, be wafted, as it were by the pinions of a dove, to enjoy the serene and beatific heights of a celestial state far beyond the bourne from which it emanated. But shall we forbear, violating the sanctity of the tomb in exhuming the remains of the departed Wells, and in the resuscitation permit him to behold, in the grand arena of nature, the rich fruitions of his discovery, through the scintillations of the deified mind, and in our transported vision partake of an untold ecstasy by breathing within that same soul and calling it once more into all the loveliness of a reviving hope and reanimated nature.

THURSDAY AFTERNOON.

The subject of anæsthesia being open for discussion,

Dr. Guilford said he coincided with the essayist; had used nitrous oxide gas principally; thought it the best anæsthetic we have in minor operations, and safer than ether or chloroform; thought it more convenient to use the small rubber bag, but has a gasometer. In this he differed with the essayist.

Dr. McDonneld had given ether, chloroform and nitrous oxide, but deprecated the use of any anæsthetic when it can be avoided; had noticed injurious nervous effects following the use of these

agents. These may not be apparent until some time after their administration.

Dr. Welchens said that nervous affections, such as Dr. McDonneld had described, sometimes follow the extraction of teeth without the use of anæsthetics. He agreed in the main with the essayist. In the majority of cases the use of such agents is decidedly beneficial; thought the shock to the nervous system, in a severe and protracted dental operation, far more injurious than any of the agents mentioned if properly administered; uses a mixture of ether and chloroform, with which he has had no serious difficulty in over twenty years' practice; uses nitrous oxide, but does not succeed so well with it as with the above mixture.

He related a case of a young lady for whom he had extracted two teeth with the use of chloric-ether; there was great nervous excitement before the operation, but it was performed successfully; the excitement subsiding immediately, and no bad effects were apparent until one week after, when it returned with much more violence than before. This effect lasted some time, and returned periodically, and it was thought to have been the result of the anæsthetic, but subsequent investigation proved it to be the result of a somewhat deranged nervous system easily excited, and always thus effected when in that state.

In cases of heart disease, would almost as soon give chloric-ether, as to perform a severe operation without it, because nervous excitement, or a heavy shock to the system, would be fully as dangerous as a properly administered anæsthetic. With plenty of cold water at hand, and a recumbent position for the patient, he feels safe in administering the chloric-ether to almost any one.

Dr. McDonneld thought the use of anæsthetics encourages the useless and reckless extraction of teeth.

Dr. Webb thought the fault lies with the operator, and not with the anæsthetic.

Dr. Moore preferred ether, as it does not leave the patient so depressed as does chloric-ether or chloroform; related a case in which he administered ether which was followed by undue excitement, preventing the extraction of the teeth; he permitted the effects to pass off and then administered *chloric*-ether. Under this agent the patient began to sink and present alarming symp-

toms, when water, artificial respiration, mustard plasters, etc., were brought into use, and after some time all was well.

Dr. Webb thought the over-stimulation of the cerebrum, twice in succession, was the cause of the trouble in the case related by Dr. Moore; for although ether acts first as a stimulant it also acts with equal power as a sedative. In carrying the anæsthesia thus far, the operator should hurry past this point and involve the cerebellum and pons varolii. As a general thing, he would rather trust a properly qualified dentist to administer an anæsthetic than a physician; and does not think it argues well for the advancement of the profession when a dentist calls in a physician to administer these agents for him.

The discussion here closed.

The following essay was then read:

THE IMPORTANCE OF FORMING A CORRECT DIAGNOSIS.

BY J. S. SMITH, D. D. S.

It is not necessary to enter into a lengthy discussion in order to prove the importance of forming a correct diagnosis of the nature and character of disease. Much less of treating diseases of the oral cavity, the dentinal system and the organs that are associated with them, directly or indirectly.

The importance of the subject before us, however, demands all the attention we can give it, both in theory and in practice. That which theory is able to secure to the practitioner (if he be willing to embrace it), is the only true basis upon which to develop a good practical status.

It is therefore necessary that every thinking mind should exercise close reasoning in investigating a case—especially a complicated one.

No practitioner of medicine or surgery (and I will include more emphatically the dental specialty), can ever expect to excel in his profession, or serve his patients well, where these important points are diregarded.

The word "*diagnosis*" conveys to the mind the definite understanding, or positive knowledge, "*I know.*" Or, in other words, that part of medicine whose object is the discrimination of diseases, and the knowledge of the pathognomonic signs of each symptom. It is a term which forms one of the most important

branches of the science of general pathology, which is that part of medical jurisprudence whose office is the knowledge of disease. It is divided into general and special, and has been defined "diseased physiology," and "physiology of disease."

The first of these divisions considers diseases in common; the second, the particular history of each. It is also subdivided into internal and external, or medical and surgical. The latter division, namely that of surgical, will more particularly claim attention.

The first thing, then, to be understood in a practical sense, is the discrimination of the normal from an abnormal state of the organs and the tissues composing them, or, in other words, the healthy from the unhealthy tissue of the parts affected. In the soft, as well as in the denser tissue, we find, when in an abnormal state, a modified or changed condition of the substance involved, which should be carefully and properly examined. It may be color, hardness, enlargement, deficiency of substance, or temperature. These conditions, however, are more apparent in an abnormal state of the *softer tissue.*

In the osseous structure, when injury is sustained, or disease sets in, the bones may be either fractured, dislocated, caries, atrophied, hypertrophied, soft, exostosed or necrosed.

Pathology, then, secures us the power to draw the line of demarkation; or, in other words, leads to the knowledge of detecting the gradual transition from the normal process of nutrition to a state of final disease.

Take for example the soft tissue. The close observer will be able to mark the transitory condition of the parts after leaving the normal state, until it has reached actual inflammation. Then to comprehend the disease at this stage of development, the careful practitioner will base his judgment upon the signs which theory has taught him to observe closely. The signs and symptoms should be well understood, and the eye should be trained practically to discern what the mind has been taught to comprehend, in order to detect at once the morbid change.

As we find that there are divisions and changes in inflammation, careful discrimination must still necessarily be employed to lead to correct conclusion at every step or turning point in the case. The pathological signs in each degree or division should hence be thoroughly understood to form a diagnosis correctly. We are

thus led to discriminate between a healthy inflammation, and that which has for its object the reparation of injuries, or unhealthy inflammation, which tends to the destruction of a part. The educated mind, through a careful diagnosis of the parts affected, must be able to control the various stages of inflammation, so as to secure the best results, for it will terminate in some form; either in resolution, adhesion, effusion, suppuration, ulceration, granulation, cicatrization or mortification, each stage of the disease having its own pathological sequence. Erroneous judgment and maltreatment at the incipient stages of those diseases might terminate in the most disastrous results.

Hence we should be sure to obey the dictations of pathology, pointing out the treatment required just at the proper time, and in order to secure these benefits the judgment should be keen, clear, comprehensive and decisive.

If a morbid change of structure has taken place in an inflamed part, the practitioner should be perfectly satisfied of the fact, else he may be as likely to employ treatment which should be applied to restore resolution, as to use the remedies for cases of suppuration. For to employ the remedies used in the healthy stages of inflammation when the organ has been broken down, and a chronic form has already set in, it would be found that in the place of making things change for the better we would be retarding nature in her course.

When the stage of suppuration has been reached, either brought about as speedily as possible or the use of the proper remedies, or by the slower process of unaided nature, the change should at once be detected, and the symptoms carefully studied and noted; and to discern this best too much reliance should not be placed upon the eye; a correct diagnosis cannot be obtained without a proper training and education of the sense of touch, for without this the fluctuation of a swollen part cannot be properly ascertained. I find by experience a great difference between the parts that may be involved and the region in which the pus may be imbedded.

The character of the pus, too, should be studied, in order to detect the healthy from the unhealthy. Without a fair knowledge of this, it would be impossible to arrive at a true diagnosis.

I think I am safe in the assertion, that there can be more failures attributed to the want of a proper knowledge of pathology,

than to a deficiency of medical or surgical skill. In dentistry, there is certainly more groping in the dark, for the want of a better knowledge of this branch of science, than almost any other cause.

This is, as I conceive, the most difficult, and I might say the most complicated branch of knowledge appertaining to the healing art of the dental profession; and I believe it to be the most willfully neglected on the part of a large majority of operations. The advanced positions are most favorably regarded by too many, to the neglect of those fundamental principles. This should not be the case, however unneccessary it may appear in the estimation of some who have an idea that they are learned out, and seemingly are content in resting upon what they may term the height of their ambition, namely, that of robbing the unwary of the gem of beauty, which the Creator has caused to make part of the anatomical structure, and to be cared for alike as well as other organs belonging to the same body. If ever we expect to raise the status of our profession to a first-class standard, and wipe out from the public mind the idea that dentistry is merely a handicraft, we must not be continually harping upon the virtues of mechanical dentistry to our patients and friends; but we should instil better ideas into the minds of our patrons, relative to the higher attainments that are sought for by thinking minds, which are making so strong an effort to scale the hill of science, to cull from her resources that knowledge required to save a part when it is impossible to save the whole.

Cases are presented ever and anon in actual practice, that speak louder than words, admonishing us to cease from making reckless and hasty diagnoses. A case in my practice is in point, and will serve to illustrate the idea here presented:

A gentleman had been suffering with an abscess in the mouth; upon being requested to give the date when it first appeared he was unable to do so, but thought it was about three years' standing; could not recollect whether he had suffered much when it first made its appearance. However, recently it had given him much pain, and especially after night. He had applied to a dentist a few months ago to have a molar tooth extracted which had caused him trouble, with the expectation of getting relief also from this disease of the mouth; however, the abnormal condition of the mouth was not changed by that operation. Without further

questions on my part he gave the doctor's opinion of the case, as follows: "That this lump, occupying the cavity, was a growth of some kind, and advised him to submit to an operation for its removal if it continued to grow worse."

This announcement (as might be expected), frightened the gentleman, who left the office, laboring under mental agony as well as physical pain. Allowing the case to take its own course he suffered and bore up patiently, until patience ceased to be a virtue. Having considerable difficulty in taking food into the mouth, and suffering pain in mastication, which at times he now was compelled to forego in the ordinary way. In this state the case came under my care for treatment. I proceeded at once to endeavor to detect the true cause of the trouble. From the position it occupied in the mouth, and other signs presented to the eye, and the peculiar sensation felt about the parts, I was at once lead to diagnose the case for rolatæ abscess. The protuberance was plainly to be seen occupying the half of the right of the hard palatine arch, with its base extending to a line opposite the second molar, and nearly to the median line. The dense layer of fibrous tissue occupying this part of the mouth presented to the touch that of a hard and unyielding mass. It was, therefore, by only the keenest sense of touch fluctuation could be detected, sufficient however, to guide me in coming to a definite conclusion as to the character of the disease.

Satisfied in this direction, the next step was to ascertain the exact seat of the disease. Each tooth was carefully examined, but no signs of a caries tooth was perceptible; failing to discover the tooth causing the trouble, dead teeth were looked for. I knew color was one sign to detect the living from the dead organ, but the eye was baffled in this, from the fact that the patient was an inveterate tobacco chewer for many years, giving still a deeper stain and color to the natural shade, the teeth belonging to the dense, yellow class, or group; percussion was tried, butno difference was, as regards pain, manifest; cutting under the free margin of the gum alone discovered the offending organ. But for this means of testation every tooth might have been sacrificed to strike the proper one. An opening was at once made through the palatine portion of the tooth (right lateral incisor) with a spur-shaped drill into the pulp cavity. A thin, acrid fluid (very offensive) at once made its appearance. Judging from the character of

the pus that the sooner the parts beyond the seat of the disease were reached by suitable treatment the better, I determined at once to extract the tooth, which was found to resist equally as much force as in ordinary cases when there was no abscess present. The cavity being drained of its contents as well as possible, the wall still kept intact as if still filled, and only could be pressed back by force, returning again to its original dimensions by the removal of pressure.

"Those abscesses, often called acute or phlegmonous, in contradistinction from those collections of pus which, being found without the observed signs of inflammation, and generally slowly, are named cold or chronic abscesses."—*Piget's Pathology*, sect. xvi., page 251.

It is probable the phenomena are essentially the same; for instance, all possible gradations between the two forms may be observed, and in the complete state of the chronic abscess the structures are not widely different from those of the acute. The abscess wall is usually firmer, more defined, so that it often can be dissected entire from the adjacent parts, and has its tissue more developed, and smoother, and less distinctly granulated; the contents are usually thin and serous, and indicate not only that the material of which they are composed was peculiarly unapt to be organized, but that, even after its transformation into pus, further degeneration ensues in it.

Now this was evidently the case with the abscess above mentioned, shown by the character of its contents. How highly important then it is to be able and vigilant in this matter of (not only) forming a correct diagnosis of the disease—that is, being positive there is a disease existing—but also of the nature of the disease itself. Disease may be simple or complicated, and it may be of a malignant or unmalignant character. Thus it will be seen that the dentist is responsible even for the life of his patients, and may, by a lack of skill in the discrimination of disease, be the means of doing much mischief, and bring disgrace upon his profession.

It behooves us, then, as professional men, claiming to be liberal in our views and actions, to take heed to the proverb; "*Make haste slowly,*" and to be sure, first that we are right, "*then go ahead.*"

As the time for adjournment was drawing nigh, there was no discussion upon the subject of the above essay.

Dr. Guilford announced the death of Dr. W. K. Brenizer, of Reading, Pa. The deceased was an honored member of the Lebanon Valley Dental Society, and one of the founders of the State society.

Dr. Moore paid an earnest and well-merited tribute to the memory of the deceased.

Dr. Scholl said that as action had already been taken by other societies, it was considered sufficient to have paid this tribute to his memory.

Dr. Robbins called the attention of the society to a double-headed steel mallet, devised by himself, and gave his reasons for adopting that form and material. It may be used from one to three ounces in weight, with smooth, hard-tempered faces. Less weight of mallet and lighter force of blow are required with this than any other material. Being concentrated a light blow condenses the gold without affecting the jaw, and causes less danger of congestion and periostitis.

Dr. Pierce having had lead, tin, wood, rubber and steel mallets, used on the same tooth in his mouth, preferred the steel.

On motion, Dr. Welchens was appointed to deliver a public address at the next meeting of the society in Erie.

The executive committee reported the names of the essayists appointed for the next meeting, and their subjects, as follows:

Discolored Teeth and their Treatment.—By R. Huey, D. D. S., Philadelphia.

Absorption of Alveolar Processes.—By G. W. Neidich, D. D. S., Carlisle.

Operative Dentistry.—By Dr. G. B. McDonneld, Conneautville.

Dental Pathology.—By Dr. J. G. Moore, Lancaster, Pa.

Mechanical Dentistry.—By Charles J. Essig, D. D. S., Philadelphia.

Preservation of Children's Teeth.—By Dr. W. E. Magill, Erie, Pa.

Dental Ethics.—By Dr. M. E. Gillespie, Pittsburg, Pa.

On motion of Dr. Amer, it was agreed that when the committee to revise the constitution and by-laws have completed their

labors, they have copies printed, on slips, and sent to the members.

The officers elect were then installed, and a vote of thanks was extended to the retiring officers for the faithful manner in which they performed their respective duties.

A vote of thanks was also extended to Dr. J. L. Hill, of Gettysburg, for the valuable assistance he gave to the executive committee in arranging a place of meeting.

On motion of Dr. Robbins, it was ordered that on the circular announcing the next meeting, a three days' session for the transaction of business be noticed.

Adjourned to meet in the city of Erie, on the first Tuesday in June, 1872.

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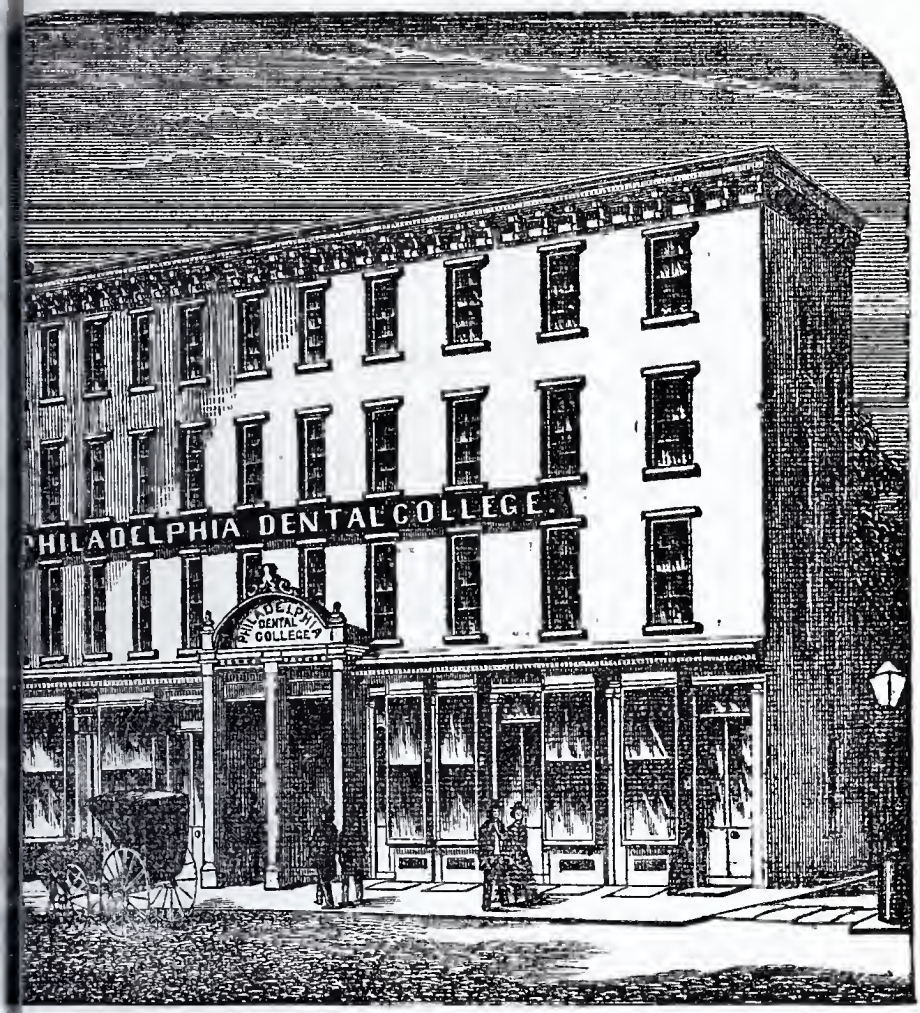

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SON ALLEN, M. D., Professor of Anatomy and Surgery.
ITH, D. D. S., Professor of Mechanical Dentistry and Metallurgy.
WELL, M. D., Professor of Chemistry and Materia Medica.
ELLWAGEN, M. D., D. D. S., Professor of Dental Pathology and Operative Dentistry.
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Yours truly, CHARLES E. FRANCIS.

DR. J. H. SMITH, Sherbrooke, P. Q., Sept. 22, 1871.

My Dear Sir: I have used your Oxychloride of Zinc for many years, with great satisfaction, and think for capping exposed pulps it has not an equal.

Truly yours, L. W. DOWLIN, L. D. S.

I prefer very much the Oxychloride of Zinc prepared by Dr. J. H. Smith, of New Haven, Conn. X. Y. Z.—*Canada Journal of Dental Science*, Vol. iii, No. 7, page 208.

DR. J. H. SMITH, Norwalk, Conn., May, 1871.

Dear Sir: I do not hesitate to say that your preparation of Oxychloride of Zinc, for dental purposes, has given me more satisfaction than any other which has come under my observation to the present time. Yours truly, A. HILL.

DR. J. H. SMITH, NEW HAVEN, CONN.,

Dear Sir: I have used your Oxychloride of Zinc almost exclusively since its introduction, and prefer it to any other. Yours truly,

Montreal, Canada, Sept. 10, 1870. W. GEO. BEERS.

DEAR DR. SMITH, Boston, Dec. 27, 1871.

Yours of 22d received. In reply, your "Oxychloride" gives me more satisfaction than any of the numerous articles of the kind prepared in the country. I invariably give it the preference in the protection of exposed pulps, and have had but a small percentage of failures following its use.

Yours truly, THOMAS B. HITCHCOCK, D. M. D.

DR. J. H. SMITH, 115 East 23d St., New York, Jan. 5, 1872.

Dear Sir: It gives me pleasure to state in relation to your Oxychloride of Zinc, that I have been familiar with it ever since its introduction, and greatly prefer it to any other preparation of its kind. Yours very truly,

JOHN T. METCALF.

DR. J. H. SMITH, NEW HAVEN, CONN.,

Dear Sir: I have used your Oxychloride of Zinc almost exclusively for some years, and find it perfectly satisfactory for all purposes to which such material is adapted, making when carefully inserted and properly protected during setting, a hard filling for temporary purposes, or as a foundation for a gold filling.

Very truly yours, C. STODDARD SMITH.

Springfield Ill., Jan. 5, 1872.

DR. J. H. SMITH, Springfield Mass., Jan. 8, 1872.

Dear Sir: I have used for some time past the Oxychloride of Zinc prepared by you, and it gives me pleasure to inform you that it meets every requirement.

Yours truly, J. J. ANDERSON, D. D. S.

DR. J. H. SMITH, NEW HAVEN, CONN., Brooklyn, E. D. Jan. 10, 1872.

Dear Sir: I have used your Oxychloride of Zinc with the greatest satisfaction. For a long time past I have been prejudiced against any thing of the kind from the fact that all other preparations have failed in my hands. Being driven to the necessity of using something of the kind I procured a box of your preparation, and it is so far superior to any other in market that I deem it not only a duty but a pleasure to make to you the above acknowledgment.

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3. To Clean Teeth.
4. To finish up plate work, which it will do with neatness and expedition.
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In fact it soon becomes an indispensible adjunct to the operating room.

If driven with work, it will enable you to perform a half more. If not, you will save half your time, now occupied, for study, or to go fishing.

Each machine is furnished with eight cavity burs and four finishing burs, also with a "back action attachment," by which the operator can drill posterior cavities.

Price of Engine, with One Dozen Instruments and Attachment, $60.00.

We append a few Letters, and Extracts from Letters, received from those who have used the Machine,

10 WEST ELEVENTH ST., NEW YORK, Dec. 1, 1871.

MESSRS. JOHNSTON BROTHERS, 812 BROADWAY,

Gents:—In reply to your note requesting my opinion regarding MORRISON'S ENGINE, I will say: Dr. J. B. Morrison placed a sample engine with me last May; since that time it has been in daily use. I rely upon it for the preparation of *all* cavities, rarely using any other instrument. This is also true regarding finishing filings, and cleaning teeth. I am not only able to do my work more rapidly and thoroughly, but with greater ease and comfort, both to my patient and myself, *economising fully one-third of my time.* I fully endorse the circular you enclose, and am satisfied that you have in no way overstated its merits.

A. L. NORTHROP.

—:o:—

28 EAST THIRTEENTH ST., NEW YORK, Dec. 15, 1872.

Since the introduction of the "Rubber Dam" by Dr. Barnum, nothing, in our judgment, has been devised for the Dental Profession of equal merit with the instrument invented by Dr. Morrison, manufactured for and offered to the profession by Messrs. Johnson Bros.

A daily experience in its use for more than four weeks, has only served to increase, day by day, our estimate of its worth, not only for the purposes for which it was supposed to be specially adapted, but more than all, in the preparation of cavities for filling. It economises the time, both of the operator and the patient, it lightens labor and lessens pain; its flexibility makes its use possible in nearly every direction, and the rapidity, smoothness, and power of the motion are almost a marvel. It is not too much to say that we have never handled an instrument with more pleasure or with better results.

W. A. BRONSON.

18 West 11th St., NEW YORK, Dec. 19, 1871.

Messrs. JOHNSTON, BROS. :

Gentlemen :—I have used the MORRISON ENGINE, for several weeks, and am much pleased with it. It answers the purposes for which it was constructed, admirably; and I would not like to be without it for a day. Very truly yours,

WM. H. ALLEN.

———:o:———

78 West 12th St., NEW YORK, Dec. 21, 1871.

Messrs. JOHNSTON, BROS. :

The *new* MORRISON ENGINE, I have received, and am very much pleased with it; indeed, it seems to be perfect. And allow me here to add, that I consider this invention of Dr. Morrison's, one of the most valuable yet offered to the Dental profession. *No progressive* dentist can afford to be without it. Yours truly,

FRANK ABBOTT, M. D.

———:o:———

NEW HAVEN, Conn., Dec. 15, 1871.

Messrs. JOHNSTON, BROS., 812 *Broadway, N. Y. :*

Yours of the 13th inst. at hand; also, received per express, Surgeon's case Liquid Gas, in good order. As to the MORRISON ENGINE, I have to say I am more than pleased with it, it is a most perfect thing, and absolutely indispensible to all operators—my only wonder is, how I have managed to do so long without it. Very truly yours,

E. S. GAYLORD.

———:o:———

NEW HAVEN, Dec. 12, 1871.

Messrs. JOHNSTON BROS. :

Dear Sirs :—The MORRISON ENGINE, which I ordered, came in good time, and I have been using it with the greatest satisfaction every day since. It is a perfect little gem, no dentist of any practice can afford to do without it, both for his own convenience and his patients comfort

After having used the Pneumatic engine for nearly six months, I can freely say that your MORRISON'S ENGINE is the *Ne Plus Ultra.* Yours truly,

JOS. H. SMITH.

———:o:———

NEWBURGH, Nov, 17, 1871.

JOHNSTON BROS :

Please send me two (2) back action spiral springs for the MORRISON ENGINE, also two cavity burs of the largest style. The last burs were well tempered, and are doing *good* execution. I haxe earned the price of the *little fellow* already, in time saved. Enclosed find small check, in amount thirty dollars ($30.00). Very truly yours,

L. S. STRAW.

———:o:———

DETROIT, Dec. 11, 1871.

Messrs. JOHNSON, BROS :

Dear Sirs :—The MORRISON ENGINE came all right; think it a perfect gem. No operator who values his time and the comfort of his patients, can afford to be without it. I broke the spiral spring enclosed in the guard, to day, but think I did not use sufficient care, but the extra one came to my relief. I think I ought to havc several of them.

Yours truly,

G. R. THOMAS.

———:o:———

ALBANY, N. Y. December 21, 1871.

Messrs. JOHNSTON BROS., New York,

Sirs :—You will find enclosed $64.00, to cover the bill of the 15th inst. I have delayed writing to you for a few days, in order to see how the engine would work—I am delighted with it—would not refuse to give $100.00 for it, if I could not purchase for less. When there is anything new in the way of appliances belonging to the engine, please let me know, or at least send me samples—as I cannot afford to be without all its advantages. My engine has paid for itself up to the present time. I only wonder we have been so long without it. Yours,

C. F. WHEELER.

JOHNSTON BROS.

Dental Depot, 812 Broadway, New York.

We take pleasure in announcing that complete success has attended our experiments during the past year, with the intent to produce

LIQUID NITROUS OXIDE,

and to provide convenient, portable, and cheap apparatus for its exhibition by the Dental and Medical Professions. By compression, we store One Hundred Gallons of Nitrous Oxide or Laughing-Gas in an iron cylinder, twelve and one-half inches long, by three inches in diameter.

To enable the operator to administer the Anæsthetic, we have provided two forms of apparatus, following the style most approved in England, but improving it in several important particulars. We herewith append a description of the various styles offered for sale, with a list of the prices.

The least expensive is the "Surgeon's Case." This comprises a strong cylinder, containing One Hundred Gallons of Gas; a strong morocco-covered case, provided with an iron ring and set screw by which the iron cylinder is held in place during use, and its delicate valve protected from injury; also, a rubber bag, with rubber tube at one end for admission of gas, while an inhaling tube, handsomely covered on its outside, and provided against any possibility of a collapse by a tin-coated spiral of wire on its inside, is fastened at its opposite end—an inhaler—a nickel-plated wrench and a nicket-plated key. In fact, *all* the apparatus necessary for administering the gas. The whole case and contents weighs about fifteen pounds. This is here shown as open, and the bag which receives the gas from the cylinder, and from which it is exhibited to the patient, is represented as filled, and suspended above the case. The cylinder is also shown as standing at the side of the case. This is the simplest and most popular form of apparatus, and will be everywhere welcomed—because of its portability for use outside of the operating room—even in those offices where the more elaborate and ornamental Nickel-Plated Gasometer is desired for embellishment and general use.

SURGEON'S CASE.

From a careful examination of the statistics of 209,893 cases, Prof. E. Andrews gives in the *Chicago Medical Examiner*, the following estimate of the relative danger from different anæsthetics:

Sulphuric Ether, - - -	1 death to	23,204	administrations.
Chloroform, - -	1 "	2,723	"
Mixed Chloroform and Ether, -	1 "	5,588	"
Bi-chloride of Methylene, -	1 "	7,000	"
NITROUS OXIDE, no Deaths in		75,000	"

Dental Cosmos.

NEW YORK, October 13, 1871.

JOHNSTON BROS.,

My Dear Sirs:—This afternoon I used the LIQUID NITROUS OXIDE you sent me, in an operation by Dr. J. Marion Sims, in presence of Drs. J. C. Nott, Walker, and Nicoll. I have produced anæsthesia rapidly, and *kept it up for fifty* (50) *minutes without intermission, to* the great delight of us all. This is probably the first time in America (possibly in the world) that anæsthesia had been kept up for this length of time with LIQUID NITROUS OXIDE GAS. I expect to use it again in a few days, in a case of ovariotomy. Please send me a charged cylinder and face piece. Yours truly,

D. H. GOODWILLIE.

—:o:—

ANN ARBOR, MICHIGAN, January, 10th, 1872.

JOHNSTON BROS.,

The LIQUID NITROUS OXIDE GAS, and the beautiful Nickel-plated Gasometer were duly received, and, after using them for some two months, we are happy to be able to speak of our success and satisfaction in the most unqualified terms.

Owing to the perfect purity of the Gas, less is required to obtain the same result, and the Gasometer is so perfect and tight that none whatever is lost. The certainty of its always being ready, and its uniformity, is a wonderful relief to the operator. You deserve, of the Dental Profession, the warmest thanks and patronage, for bringing this thing to so successful a result. Every Dental Office should be supplied with it, and no doubt it will be more largely used than ever before, as it is, without doubt, the safest, surest, and most rapid in its effect and elimination, of any anæsthetic known. Its portability must also bring it largely into use in surgical operations, when properly administered and alternated with air. There is no reason why patients may not be kept under its influence as long as under chloroform, while the elimination and recovery are at once more perfect, rapid and complete. Respectfully,

JENKINS & WHITE.

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23 WEST TWENTY-THIRD STREET, NEW YORK, Jan. 10, 1872.

MESSRS. JOHNSTON BROS., 812 Broadway.

Gents:—I am using one of your Nickel-Plated Gasometers; also, the LIQUID NITROUS OXIDE, and it gives entire satisfaction. I do cheerfully recommend it to the Dental Profession as the best in market.

S. A. MAIN.

JOHNSTON BROS.

EXTRACT FROM A REPORT

OF THE

STATE DENTAL SOCIETY

OF

PENNSYLVANIA.

JUNE, 1870.

BY GEORGE W. NEIDICH, D.D.S.

"Dr. S. S. WHITE presented, through Mr. S. T. Jones, a choice selection of e most improved instruments of the present day. At the request of the ociety, Dr. Robbins explained the merits and advantages of the instruments esigned by different operators; the fine points were examined by the members esent with the aid of a magnifying glass, and universal commendation ex-essed of the superiority in their manufacture. Dr. VARNEY'S Pluggers, as so Dr. ATKINSON'S "Omega" Mallet Pluggers, were particularly admired. BBOTT'S Enamel Chisels, Small Scalers, Hand Pluggers, and Plug-finishing urs were also highly spoken of by the members. A set of buffalo-horn handle luggers, scalers and burnishers, were exhibited, with aluminum bronze fer-ules, and were much admired for the superiority of the workmanship. Sam-le sets of sectional blocks were exhibited, designed for special cases—one of hich had a shoulder for articulation where but few of the lower natural or-ans remained; another, in which the front block was twisted from the crown f the central to the top of gum over canine tooth; the advantages of this latter ere apparent to all. Specimens were exhibited ground down to the pins, to ow their superiority, securing the greatest strength of both platina and porce-in. Great praise was bestowed on Dr. S. S. White for the great perfection e has attained in the manufacture of dental instruments and porcelain teeth."